THE FUNCTIONAL RELATIONSHIP OF MANAUS TO THE AMAZON BASIN

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF FIGURES	vii
LIST OF TABLES	viii
INTRODUCTION	1
A Metropolis in the Rainforest	1
Methodology	2
Definitions and Terminology	7
Notes	12
SPORADIC GROWTH OF A TROPICAL CITY	13
Historical Development	13
Contemporary Manaus	26
Notes	56
REGIONAL TRANSPORT IN A TROPICAL ENVIRONMENT	61
Rivers: A Natural System	61
Air Transportation: An Integrating Force	72
Highway Transportation: An Occupying Force	85
Notes	98
MANAUS AS A SERVICE CENTER	101
The Administrative Function	101
A Financial Center	110
Educational Services	114
Medical Services	121
A Center for Religious Activity	128
The Communication Network	132
Notes	136
THE COMMERCIAL HUB OF WESTERN AMAZONIA: A TRADITIONAL FUNCTION	139
Recent Port Activity	139
Exit Port Functions	143
Port of Entry and Distribution Center	150
Intra-Amazonian Trade	159
Notes	164

Page

A DEVELOPING INDUSTRIAL CENTER IN WESTERN AMAZONIA . . . 165

Consumer-Oriented Industries 166
Raw Material-Processing Industries 171
The Petroleum Industry 179
New Industrial Developments 184
Zona Franca--An Attempt to Stimulate Development . . . 189
Notes 195

A SUB-REGIONAL CENTER LACKING AN URBAN HIERARCHY 197

Population 197
Settlement Functions 201
Notes 212

THE CITY IN REGIONAL PERSPECTIVE 213

Notes 224

BIBLIOGRAPHY 225

BIOGRAPHICAL SKETCH 233

LIST OF FIGURES

Figure		Page
1.	Manaus, Amazonas, 1968	ix
2.	Amazonia	9
3.	Manaus	31
4.	Meteorological Norms for Manaus, 1958-1967	64
5.	Transportation in Western Amazonia	76
6.	Manaus Port Activity 1953-1967	141
7.	Export Hinterland of Amazonas--1967	151
8.	Import Hinterland of Amazonas--1967	154
9.	Volume of Intra-Amazonian Trade 1967	160
10.	Value of Intra-Amazonian Trade 1967	161
11.	Urban Centers in Amazonia	206
12.	Amazonian Spheres of Urban Influence	208

LIST OF TABLES

Table		Page
1.	A Record of Banking Activity in Western Amazonia, as of December 31, 1967	115
2.	University of Amazonas--Enrollment by Faculty--1968	120
3.	University of Amazonas--Student Origin--1968	120
4.	Regional Products Exported from Amazonas--1967	146
5.	Destination of Amazonas Exports 1967	148
6.	Origin of Amazonas Imports 1967	152
7.	Merchandise Imported by the State of Amazonas in 1967 by Class, Weight, and Value	156
8.	Census of Industry and Food Processing in Manaus--June 1968	167
9.	Production Figures for the Manaus Refinery--1967	181
10.	Distribution of Petroleum Products from the Manaus Refinery--1967	183
11.	Population of Amazonia--1960	198
12.	Urban Centers in Amazonia Exceeding 2,500--1960	200

Figure 1. MANAUS, AMAZONAS, 1968

INTRODUCTION

A Metropolis in the Rainforest

It is difficult to consult a map of South America and not notice, at least in passing, the vast apparently unoccupied area collectively known as Amazonia. In the center of this enormous expanse of selva is the city of Manaus, capital of the state of Amazonas. At first glance, it appears to be just one of a half dozen names commonly listed on maps of this area of the world, somewhere between: Pôrto Velho, Rio Branco, Tefé, Boa Vista, Santarém, and Belém. However, Manaus emerges from even the most cursory examination as a rather unique geographical phenomenon; a metropolis of some 225,000 inhabitants completely surrounded by millions of square kilometers of tropical rainforest which for all practical purposes virtually isolate this city from the rest of Brazil and the world.

The northern portion of Brazil contains a number of other cities, predominantly administrative centers, equally isolated in this selva surrounded limbo. While most of these interior cities exemplified very low rates of economic growth and development during the last fifteen years, Manaus experienced a period of rapid growth and economic expansion and developed into a regional center of

increasing importance. The continued growth and development of a city in such an unlikely surrounding stimulated the professional interest of this student and resulted in the present research project to examine the contemporary role of Manaus as a tropical metropolis, or, more specifically, the functional relationship of Manaus to the Amazon Basin.

A favorable location in respect to the river system which dominates transportation in the region has traditionally been cited to explain the growth of Manaus.[1] The influence of the transportation system in Amazonia which encouraged the development of Manaus appears to have also prevented a typical hierarchy of urban centers from developing in the region. The lack of an integrated transportation network restricted the occupation of Amazonia to riverine settlements strung along an extended linear axis. An examination of Manaus' present function as an expanding urban center within this distorted urban pattern serves to place an apparent atypical development in its proper regional perspective. If Manaus is still dependent upon its function as a transportation center, it is also important to anticipate how Brazil's aggressive road building program and the partially completed Cuiabá-Pôrto Velho-Manaus road will affect the city's future role.

Methodology

Prior to departing from the United States, this

writer reviewed pertinent materials in the holdings of the University of Florida, Columbia University, and New York City Public Library. Existing published material on Amazonia is primarily historical in nature and provides an excellent basis for analyzing the historical development of Manaus. Contemporary materials, however, are predominantly travelogue accounts of life and adventure in the "green hell" of Amazonia.

In the forefront of the considerable number of studies concerning the functions of cities as central places are the works of Christaller, Lösch, Berry, and Haggett.[2] Studies of central places, in general, demonstrate that in a region characterized by a well-developed hierarchy of urban centers a wide variety of cities would exist. The functions of these cities can be accurately classified according to their order within the hierarchy. The vast majority of these studies, however, concern cities in developed countries, either the United States and Canada or Western Europe.[3] Since preliminary research revealed the absence of a normal urban hierarchy in northern Brazil, this writer attempted to determine to what extent the findings of studies carried out in developed countries applied to the obviously unique case of Manaus.

The best existing study of urban centers in Brazil is Evolução da rêde urbana brasileiro (Evolution of the Brazilian Urban Network) by Pedro P. Geiger.[4] Also useful

for this particular area is a study of the urban organization of Amazonia prepared by Michel Rochefort.[5] Even more important though, is a recent nationwide study prepared by the Brazilian Institute of Geography (IBG) whose findings were published in 1969.[6] This Brazilian study appears to accurately locate Manaus in relation to the other major urban centers of Brazil; but it is lacking in details on the city's regional importance.

The on-site research efforts conducted in Manaus, throughout Amazonia, and finally in Rio de Janeiro, evolved around seven major topics: the establishment and growth of the city to its present stage of development; the existing transportation network; the implementation of overland transportation to Manaus and its possible effect on the city; the influence of the city as a service center; the extent to which Manaus has maintained its traditional function as the import-export center of the interior; modifications in the city's historic role resulting from the move toward industrialization; and finally, an attempt to evaluate the city's present and future role as the dominant center in Western Amazonia.

Realizing the problems involved in using a foreign language to conduct research investigations in an unfamiliar culture, this writer began researching in the libraries of Manaus while improving his facility for, and confidence in, speaking the Portuguese language. The Manaus library of the

National Institute of Amazonian Research (Instituto Nacional de Pesquisas Amazonia) or INPA, as it is commonly known, contains a reasonably complete collection of works concerning Amazonia. A thorough review and examination of their holdings, however, reconfirmed earlier beliefs concerning the lack of contemporary published data on this region. Notable exceptions are the special reports being prepared by regional and local organizations for limited circulation. Two of the most important of these organizations are SUDAM (Superintendência do Desenvolvimento da Amazonia), a federal agency charged with coordinating regional development, and CODEAMA (Comissão para desenvolvimento do Estado de Amazonas), a state development agency for Amazonas.

The department of statistics for the state of Amazonas was the source of a considerable amount of unpublished economic data on a statewide basis. To a lesser extent, comparable offices in the state of Acre and Pará and the territories of Rondonia, and Roraima provided similar information. For the city itself, the unpublished records of the Port of Manaus, which went back to 1953, were very useful. Federal and state agencies in Manaus, and later in Belém, and Rio de Janeiro were extremely cooperative in providing copies of specific reports prepared for limited distribution and/or permitting consultation of existing materials.

It is common knowledge that the reliability of statistical data coming from underdeveloped countries, including Brazil, is suspect. Needless to say, many an hour tediously spent copying statistics was later revealed to have been a waste of time when conflicting data revealed glaring inconsistencies. Only by constantly double checking one source against another was a consistent record of statistical data compiled. The department of statistics in Manaus and the records of the Treasury Department (Ministério da Fazenda) in Rio de Janeiro proved to be the most consistently reliable sources of data. When this research was being conducted, statistical information on the values of imports and exports was only complete through 1967. That is the year most frequently referred to in this study, although occasional references are also made to 1966, and 1968. The reliability of statistical data presented herein is considered, by this writer, to be very good.

Interviews were a particularly valuable source of information. Public officials and private businessmen were quite willing to discuss their particular operation and how it related to the problems and prospects of development taking place on the city, state, and regional level. Private individuals from all strata of society were no less willing to relate the advantages and disadvantages of life in Manaus and/or in one of the small communities in the interior of the state. Although officials and businessmen frequently

provided data of one sort or another during an interview, the informal talks with individuals often resulted in a better understanding of what life is like on a day-by-day basis for the great majority of Amazonian society. Obviously, for an accurate and comprehensive view of the situation, it was desirable to have a combination of as many relevant factors as possible.

In an effort to accumulate comparative data, visits were made to the other administrative centers in the region: Pôrto Velho, Rio Branco, Boa Vista, and Belém. The major urban centers in the state of Amazonas were also visited. In each of these locations local leaders were interviewed, economic data and records were consulted, and pertinent material was recorded.

Definitions and Terminology

The use of the term "Amazonia" requires an explicit definition as to which or to what Amazonia one is referring. In its broadest sense Amazonia includes the northwestern half of Brazil; eastern Bolivia, Peru, and Ecuador; southeastern Colombia; and southern Venezuela. In a more specific sense it refers to a certain area within each of the above countries. The general location of this study is in Brazil's "Amazonia," but even there the term suffers from a certain degree of ambiguousness. Traditionally it included the states of Amazonas, Pará, and Acre, and the territories of

Amapá, Roraima, and Rondonia. In 1953, the federal government established a regional organization, SPVEA (Superintendente do Plano de Valoriazção Ecnômica da Amazonia), to formulate and execute a coordinated plan for the economic development of the entire area. According to the law creating the agency, Amazonia is defined as

> the States of Pará and Amazonas; the Federal Territories of Acre, Amapá, Guapore (Rondonia), Rio Branco (Roraima) and that part of the State of Mato Grosso north of the 16° parallel, the State of Goiás north of the 13° parallel; and the State of Maranhão west of the 44° meridian.[7]

Much of the published material, including the census data and the statistical yearbook of Brazil (Anuário Estatístico do Brasil), still utilizes the traditional definition of Amazonia, which coincides with the North Region (Grande Região Norte), a geographical and statistical region commonly referred to throughout the country. The traditional definition does not include the portions of Mato Grosso, Goiás, or Maranhão. These areas have no direct relations with Manaus, and consequently do not pertain to this study; Amazonia, as used in this paper, signifies the political entities of Amapá, Pará, Amazonas, Roraima, Acre and Rondonia. See Figure 2. A further differentiation of Amazonia also commonly used within Brazil refers to Eastern Amazonia and Western Amazonia. Eastern Amazonia consists of the state of Pará and the territory of Amapá, while Western Amazonia includes the states of Amazonas and Acre and the territories of Rondonia and Roraima.


72°
66°
60°
54°
48°
42°
VENEZUELA
COLOMBIA
TERRITORY
OF
RORAIMA
Boa Vista
Rio Branco
GUYANA
SURINAM
FRENCH GUIANA
ATLANTIC OCEAN
TERRITORY OF AMAPÁ
Macapá
Rio Trombetas
0°
Rio Negro
Rio Japurá
Rio Ica
Rio
Manaus
Rio Amazonas
Belém
Rio Capim
PERU
Solimões
Juruá
Purus
Madeira
Tapajós
Xingu
Tocantins
A M A Z O N A S
P A R Á
6°
ACRE
Rio Branco
Pôrto Velha
TERRITORY OF RONDONIA
PERU
BOLIVIA
12°
AMAZONIA
0 100 200 300 400 500
Scale in Kilometers

Figure 2

A foreigner could conceivably acquire the impression that Brazilians have a special facility for formulating lengthy titles for private companies, state and federal agencies. Fortunately, most of these titles condense very well into a pronouncable acronym, which, of course, everyone uses. Some of the more common acronyms which appear in this study are SUFRAMA (Superintendência da Zona Franca de Manaus); COPAM (Companhia de Petróleo da Amazonia); and the previously mentioned INPA; CODEAMA; and SUDAM, which officially replaced the SPVEA in 1966.[8]

Unfortunate though it may be, the words "inflation" and "Brazil" are almost synonymous to many people, including a considerable number of Brazilians. The current monetary unit in Brazil is the novo cruzeiro (NCr$) which is equivalent to 1,000 cruzeiros (Cr$) or old cruzeiros as they are commonly called to distinguish them from the new. Unless otherwise indicated, the monetary values used in this study are new cruzeiros. Throughout 1966, the official exchange rate was NCr$2.2 per U.S. $1.00. In February, 1967, the new cruzeiro was devalued to NCr$2.7 per U.S. $1.00 and continued at that level until November when it was devalued to NCr$3.2. The average exchange rate for 1967, was NCr$2.7 per U.S. $1.00. In 1968, the exchange rate began at NCr$3.2 and held that value until July when a succession of smaller devaluations began which finally reached a NCr$3.8 exchange rate by the end of the year.[9]

The term "interior" appears frequently in this study and therefore requires some clarification. From Belém a trip to the interior means anywhere in Amazonia, including Manaus. In Manaus "interior" refers to any place in the state or region outside of the city itself. In the smaller communities it is used to indicate any other less inhabited location inland, upriver, or downriver from that particular community. To the rural peasants scattered along the numerous rivers of Amazonia, the interior is just outside the door of their thatched hut.

NOTES

1. Henry Walter Bates, The Naturalist on the River Amazonas (London: John Murray, 1892), p. 173; Michel Rochefort, "A Organização urbana da Amazonia Brasileira," Boletim Carioca, XII (1959), 16-17.

2. Brian J. L. Berry and William L. Garrison, "Functional Bases of the Central Place Hierarchy," Economic Geography, XXXIV (1958), 304-11; Peter Haggett, Locational Analysis in Human Geography (New York: St. Martin's Press, 1966); the theory of central place as originally introduced by Walter Christaller and subsequently expanded by August Lösch is thoroughly examined in the above book by Peter Haggett.

3. Brian J. L. Berry and Allen Pred, Central Place Studies: A Bibliography of Theory and Applications (Philadelphia: Regional Science Research Institute, 1965).

4. Pedro Pinchas Geiger, Evolução da rêde urbana brasileiro (Rio de Janeiro: Centro Brasileiro de Pesquisas Educacionais, 1963).

5. Rochefort, op. cit., pp. 15-29.

6. Subsídios à Regionalização (Rio de Janeiro: Instituto Brasileiro de Geografia, 1968).

7. SPVEA 1954/1960: Política de Desenvolvimento da Amazonia, Vol. I (Rio de Janeiro: Gráfica Editora Livro, 1961), p. 24.

8. "Lei no. 5,173, de 27 de outubro de 1966," Uma Nôva Filosofia de Governo (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1966), pp. 13-30.

9. "Dolar sobe 1.6% em 20 dias passando a valer NCr$3.805," Jornal do Brasil, 12 Dec., 1968, p. 4.

SPORADIC GROWTH OF A TROPICAL CITY

Historical Development

As a former outpost and subsequent collecting point for tropical forest products, the fortunes of Manaus have ebbed and flowed in response to outside stimuli over which the inhabitants of the city seemingly exercised little or no control. Dependence on an economic system based on collecting instead of producing repeatedly resulted in difficult times for the city and region. This "collecting mentality," which still dominates the regional economy, originated with the colonizers. As one writer characterized it, "A society without an economic conscience developed in Amazonia, uncontrolled in the process of life, always after the easiest way to stability."[1] Instead of developing a rational system of agriculture, pastoralism, or even industry, "they utilized what nature delivered to them in abundance, generously."[2]

After an initial two hundred years in the backwater of civilization, the city emerged from obscurity on a surge of prosperity based on the international demand for rubber, a native product. Unable (or unwilling) to compete with rational production techniques, the economy of the region soon collapsed and the prosperity of Manaus quickly faded.

Rapid decline and stagnation followed the financial collapse and the city sank once again into oblivion.

The raw material demands of World War II temporarily rejuvenated the economy of the region. Since then, the city has experienced a painfully slow economic revival. In an attempt to stimulate economic development, a free zone was established in Manaus in 1967. The result has been a renewed boom-town atmosphere, reminiscent of earlier days, and a growing apprehension that it may, once again, be a short lived prosperity.

The Forgotten City 1669-1869

The increasing Dutch and Spanish intrusions into the Amazon region during the mid-seventeenth century alarmed the Portuguese crown and resulted in a move to protect the Portuguese claim to the region bordering on the Rio Negro. Accordingly, in 1669, a fort was established on a site three leagues upriver from the mouth of the Rio Negro. This new bastion of the Portuguese crown was appropriately named Fortaleza de São Jose do Rio Negro.[3]

Evidently the Dutch and Spanish threat to the area was not too serious because the Fortaleza de São Jose do Rio Negro never amounted to anything more than a token military establishment. At the same time, however, it was a center from which the accompanying Carmelite priests worked to Christianize the native inhabitants. A historian

of the city, Mario Monteiro, says that the soldiers of the fort married the local Indian women and a small community developed.[4] In 1774, 105 years after its founding, Lugar da Barra, as it was then commonly called, consisted of "220 people, including the vicar, the director and ten women more than ninety years old."[5] Four years later (1778) a visitor described the inhabitants as consisting of "34 whites, 220 Indians, and 2 Negro slaves employed in the manufacture of butter."[6]

By 1783, the old fort had reached such a stage of deterioration that it was finally ordered disarmed. At about the same time, the seat of the Capitancy of São Jose do Rio Negro was transferred from Lugar da Barra to Barcelos, approximately five hundred kilometers up the Rio Negro. During the next twenty-five years the Capitancy was returned to Lugar da Barra, transferred back to Barcelos, and finally ended up in Lugar da Barra again in 1808. In 1848, by virtue of a legislative act of the Pará assembly, the community of Lugar da Barra became a city, henceforth to be known as the city of Barra do Rio Negro. Two years later the Province of Amazonas was created, and, finally in 1856, the locality of Barra do Rio Negro changed its designation to the "City of Manaus."[7]

The community grew very slowly. In 1850, after almost two hundred years, it only contained "about 3,000 inhabitants."[8] During the late 1850's living conditions

in the city deteriorated seriously. A temporary resident in the city at that time stated that:

> Barra was formerly a pleasant place of residence, but it is now in a most wretched plight, suffering from a chronic scarcity of the most necessary articles of food. The attention of the settlers was formerly devoted almost entirely to the collection of the spontaneous produce of the forests and rivers; agriculture was consequently neglected, and now the neighborhood does not produce even mandioca-meal sufficient for its own consumption.[9]

As the city completed its first two hundred years, there was no indication that it would ever be anything more than just a sleepy little tropical village. At that time a visitor described Manaus as "an insignificant little town of about 3,000 inhabitants" with "unpaved and badly leveled streets, low houses, and cottages of most primitive construction. . . ."[10] That description soon became little more than an unpleasant memory as the combination of advantageous location and international demand for rubber transformed Manaus into a modern city and the rubber capital of the world.

The Rubber Capital 1870-1912

Technological innovations and political decisions contributed to Manaus' emergence from obscurity. In 1853, steamships were introduced into the Amazon Valley and provided a "tremendous stimulus to Manaos. It expanded trade and gave the city the opportunity to become the

transportation center."[11] No less important was the opening of the Amazon River to the merchant marines of all nations in 1866, which enabled Manaus to develop direct commercial connections with the rest of the world.[12]

In combination with the favorable political climate, improved transportation, and demand for a regional product, an essential factor in Manaus' rapid rise to power and prosperity was the advantageous location. Its central position in the Amazon basin, and accessibility to the largest ocean-going vessels, made the city an ideal collecting and transhipment center for rubber on its way to foreign markets and for the supplies needed to sustain the rubber tappers (seringueiros) in the interior. The city's excellent natural harbor was markedly improved at the turn of the century by the construction of modern port facilities. The new port began operating in 1903 and gave Manaus "a great advantage over Itacoatiara and other rival towns."[13]

As rubber exports and demands increased, a corresponding need developed for new sources of labor to explore the selva, locate new rubber trees, mark rubber trails (seringals), and collect the precious liquid. In 1877, when the Amazon basin was trying to attract new manpower, a severe and prolonged drought settled on the more densely populated Northeastern Brazil. Refugees from the drought were encouraged to emigrate to the Amazon basin and, as Celso Furtado states,

> Once the migratory flow had started, it became easier to keep it under way. Interested in emigration, the government of the Amazon states organized propaganda services and granted subsidies for costs of transportation. In this way the great migratory current was formed, permitting the expansion of rubber production in the Amazon basin. . . .[14]

Relisble records do not exist, but it is estimated that no less than a half million people were attracted to the Amazon basin during this period.[15] Along with the flow of immigrants from the Northeast, who, for the most part, became the rubber tappers of the interior, a considerable number of foreign immigrants were also attracted to the urban centers of Belém and Manaus. In Manaus

> Englishmen set up the tram lines, sanitary systems, subfluvial telegraph lines, telephone lines, and the floating docks. Americans built the water-works. Germans and Englishmen settled as big exporters. Portuguese established themselves as "aviadores," importers, and grocers. Syrians became mostly merchants, itinerant traders, peddlers, "regatoes." Italians specialized in the shoe business, but most of them were employed as unskilled workers, porters mainly. Polish girls came to explore the prostitution business.[16]

Manaus was not transformed from a river village into a glittering city overnight, in spite of the influx of new inhabitants, but the process was rapid and dramatic. In 1867, the city contained only seventy-four commercial establishments; by 1869, the total had increased to two hundred and twelve; by 1904 there were sixty-two businesses exclusively devoted to the rubber trade.[17]

The boom reached its peak in 1910, when the city accurately reflected the prosperity and good times brought on by the demand for rubber.

> This capital of 50,000 inhabitants was bound together by a steel band of fifteen miles of electrical railway, whose streetcars came and went from the praça. Manaus loudly boasted of all the amenities of any European city of similar size or even larger. An excellent system of waterworks, an efficient garbage collection and disposal system, electricity, telephone service, handsome public buildings and comfortable private residences attested to the modernity of the city.[18]

The residents were justifiably proud of their modern city and the crowning monument to its position as a center of economic and cultural importance was the Manaus opera house. Construction of the impressive structure was completed in 1896, at an estimated cost of two million dollars.[19] Located on a hill overlooking the city, the huge domed theater symbolized the city's progress and achievements.

The false prosperity of the Amazon basin was based on an irrational and uneconomical system of collecting wild rubber. Artificially high prices, maintained by increasing demand, encouraged the development of a plantation system of production. Unfortunately for Amazonia, this achievement took place in Malasia--not the Amazon Valley. Once the plantations started producing, they quickly dominated the entire market. The percentage of plantation-grown Asian rubber on the world market "grew from 0.3 in 1905 to 9.0 in

1910 to 67.6 in 1915. By 1922, plantation rubber accounted for 93.1 per cent of the sales."[20]

Once it began, the development of Manaus was steady and dramatic. Its decline was sudden and frightening. As E. Bradford Burns described it

> In Manaus, prosperity began to give way to panic as the historic year of 1910 drew to a close. The frontier activities so characteristic of a boom town subsided. The docks and warehouses would deteriorate; the banks would close; foreign merchants would move away; the opera house would fall into disrepair. Rubber had followed a course marked by dyewood, sugar, gold, diamonds, tobacco, cotton, and cacao. Manaus took its place beside Olinda and Ouro Preto.[21]

Depression and Stagnation 1913-1942

Rubber had so dominated the regional economy that production, commerce, and transportation were almost solely dependent upon this single product. During the rush to take part in the general prosperity, the agricultural areas of the Lower Amazon were largely abandoned and "Manaos and the rest of the region became completely dependent on foodstuff and other products from the outside."[22] With the collapse of the inflated rubber market, commercial activity came to a standstill. Banks closed their doors and went out of business, "well settled commercial houses in Manaos went bankrupt, and many businessmen became impoverished since they dealt on a credit basis."[23] The effects on all levels of society were immediate and severe.

The entire system of rubber production operated on

an interwoven network of credit. When the market failed and credit suddenly disappeared, the seringueiros in the interior were left with no market for their rubber and no supplies to sustain them. They were the tragic victims of a vicious system of exploitation which kept them isolated in the jungle and forever in debt.

> Without means for returning home and unaware of what was happening to the world rubber economy, the migrant resigned himself to staying. Compelled to eke out his budget through local hunting and fishing activities, he regressed to the most primitive form of subsistence economy--that of the man living in the tropical forest. . . .[24]

Many of these impoverished and abandoned rubber tappers eventually drifted into Manaus seeking employment. "Full of diseases, mainly beri-beri and malaria, they contributed to the high index of mortality in the city, becoming at times a burden to the community."[25] They also contributed to the growth and outward spread of the city. Unable to pay rent, they built their own thatched houses on the outskirts of the city. As a result, "the suburbs, which up to that influx were mainly small semi-rural settlements, became important residential areas."[26] At the same time, other refugees from the interior began building their houses and shacks on logs and rafts in the river and anchoring them in the harbor. These eventually constituted a floating city (cidade flutuante) of tremendous proportions that continued in existence until the mid 1960's.

The effects of the depression that settled on Manaus

in 1913, were long and severe. With the loss of the rubber monopoly, the regional economy gradually returned to other native products, principally: timber, essence of rosewood, Brazil nuts, tropical fibers, and animal skins. It was a difficult time for the region and the city. As one writer put it, "rubber changed Manaos from a poor village into a modern city. Since the boom, it has had a hard struggle, but it has remained a city."[27]

With few prospects for an economic revival, the city stagnated and gradually deteriorated. In 1947, a resident of Manaus described the changes that took place during this period,

> There has been an increase in the population of the whole city since the boom, but there has been an increase in poverty as well. Very few buildings and residences have been constructed. Travelers who visited the city twenty or thirty years after the boom found it as it was or even worse.[28]

The Growth of a Metropolis 1943-1960

The outbreak of World War II and the subsequent loss of the Far East rubber supply once again focused world attention on the natural reserve of rubber lying dormant in the tropical forests of the Amazon Valley. An emergency program was initiated by the United States to develop and maintain a new supply of rubber. The Rubber Development Corporation, charged with the responsibility of maximizing rubber production on a short-term basis, was organized by

the United States Government and, with Brazil's permission and cooperation, installed in Amazonia.

A public health organization called SESP (Serviço Especial de Saúde Pública) was jointly founded by the two countries at the same time. The new health organization performed an essential service in the war effort to extract rubber from Amazonia. Its primary purpose was to provide "medical protection to the producers of strategic raw materials--the rubber gathers in the Amazon Valley."[29] Fortunately this program never completely disappeared and it is still the only organized attempt, however inadequate it may be, to provide medical assistance to the interior inhabitants of this vast region.

The large amounts of foreign capital channeled into the local economy during the 1940's had a revitalizing effect upon Manaus. The increase in commerce was accompanied by a new wave of immigrants--rubber collectors for the interior and merchants hoping to turn a quick profit in the city. To facilitate transportation to and from the city, an American air base was built on the outskirts. It later became the commercial landing strip and helped establish Manaus as an air-transport center.[30]

In comparison to previous periods of affluence, the prosperous days of the 1940's were relatively short lived. After the war ended it was no longer necessary to subsidize high-cost rubber production in Amazonia. Another marked

decline in the local rubber industry occurred. This time, however, the city's economy did not completely collapse. An initial period of economic readjustment was followed by a slow but steady trend toward industrialization.

According to a local economist, there was an accumulation of excess capital during the war--a result of the very high prices paid for rubber. Following the war this capital was invested in new industry--primarily plants to process regional products: rubber-washing factories, Brazil nut processors, saw mills, tanneries, brickyards, and rosewood oil distilleries.[31] Many of the new industrialists were foreigners: Portuguese, Englishmen, Jews, and Brazilians from other states. As the new industries survived the initial skepticism and even prospered, they began to dispel the widely held belief that "the only thing that can flourish in Manaos is trade. . . ."[32]

Plants equipped to handle only the rudimentary processing of traditional Amazonian exports were soon followed by completely new industries. In 1951, construction started on the first factory of a nascent jute industry--a relatively new crop in Amazonia. The first plant, Brasil Juta, began operating in 1954, and was followed by increasingly sophisticated plants as other industrialists expanded into the new field.[33]

A major move toward diversification of the industry centered in Manaus came with the construction of an oil

refinery. A small refinery, initially limited to 5,000 barrels per day, it began processing in 1956, and quickly became the principal source of petroleum products for Amazonia.[34] The new refinery also established its owner, I. B. Sabbá, in the vanguard of the progressive, new industrialists of Amazonas.

The new industrial growth of the city was more than matched by substantial population increases. In 1910, at the height of the rubber boom, Manaus was estimated to have 50,000 inhabitants. The collapse of the rubber market was followed by an exodus, of those financially able, from Manaus and the interior. Thirty years later, even with the influx of seringueiros from the interior, the city only numbered 66,854.[35] The economic upturn of the 1940's renewed the flow of immigrants and by 1950, the city's population had expanded to 110,678; ten years later it totaled 154,040.[36]

The steadily increasing population exerted tremendous pressures on the city's infrastructure. Virtually untouched since their installation at the turn of the century, these facilities quickly became woefully inadequate to meet the increased demands. Sewer lines drained only the central core of the city. The city's water supply flowed through a jerry-built system which pumped river water straight into the water lines in a futile effort to keep up with the demand. The city's electricity generating plant deteriorated

so badly that the electric street cars had to be discontinued in the late 1950's due to a chronic lack of power. Privately-owned generators were standard equipment in all factories, shops, and stores which required a constant and reliable source of electricity. By 1960, the situation was so desperate that residents in the center of the city were using candles for illumination at night.[37]

Contemporary Manaus

Site and Situation

Located eleven kilometers above the juncture of the Rio Negro and the Solimões at Latitude 3°08'07"S. and Longitude 60°01'34"W.,[38] Manaus fronts on an enormous bay in the Rio Negro. This combination of a good harbor at the convergence of two major rivers and central location within Amazonia have been widely acclaimed as the basis for the city's development. In the 1850's, Henry Walter Bates reflected on the city's advantageous location

> The situation of the town has many advantages; the climate is healthy; there are no insect pests; the soil is fertile and capable of growing all kinds of tropical produce, and it is near the fork of two great navigable rivers. The imagination becomes excited when one reflects on the possible future of this place, situated near the centre of the equatorial part of South America, in the midst of a region almost as large as Europe. . . .[39]

One hundred years later a Brazilian geographer, Aziz Nacib Ab'Saber, credited Manaus' development to the

region's exclusive dependence on fluvial transportation and the city's "absolutely privileged geographic situation."[40] Another explanation for Manaus' emergence as the region's dominant center, instead of Itatcoatiara, Parintins, or some other equally endowed location, was put forth by Michel Rochefort--a French geographer. He attributes the city's present importance to the "appreciation of its natural advantages, during the golden era of rubber, when an English company there installed the only modern port of the region."[41]

Form and Internal Structure

Spreading over the rolling terra firma on the left bank of the Rio Negro, Manaus is well above the annual inundations that occur in this region. The urban area, though, is heavily dissected by small tributaries (igarapés) of the Rio Negro. Some of the smaller igarapés were filled or covered as the city grew, but for the larger ones, which are transformed from a small stream in the dry season into a swollen torrent in the rainy season, such action is impossible. Even though they are bridged by the city's principal streets, these igarapés effectively separate the central core of the city from the outlying neighborhoods (bairros). These outlying bairros with their difficulty of access and lack of facilities constitute the favelas of Manaus, where the new migrants from the interior build their thatch huts.

Like every other community in the Amazon Valley, Manaus is oriented toward the river. The waterfront and port facilities are still the terminal point of the city's life line. Regional products depart from that point while food and manufactured goods for the city and region enter there. Lacking an alternate supply line, the central market place and wholesale business establishments continue to concentrate near the waterfront. The central business district extends northward from the wholesale area and is itself only slightly removed from the port area.

As late as 1966, the waterfront area of Manaus was the site of a unique neighborhood called the cidade flutuante. It began in the 1920's, following the collapse of the rubber boom. Individuals no longer able to support their families reduced living expenses by constructing houses on logs floating in the river. From the 1920's onward the neighborhood continued to grow as new people migrating to Manaus followed the example of their predecessors. A study of the "city" in 1964, reported more than 9,000 inhabitants.[42] In addition to the residents, the "city" boasted "stores, bars, offices, boat repair shops, pharmacies, night clubs, an ice plant, electricity, piped water and telephones. . . ."[43] Aware of the very real navigational hazard caused by the continuously expanding "city" and anxious to eliminate a serious sanitation problem and eyesore, the city and state government and the Captain of the Port of Manaus joined to

force its removal. By 1968, the ice plant and several floating service stations were all that remained of a once active "floating city."

The most desirable residential areas in Manaus are interspersed with and clustered around the downtown area of the city and in the adjoining northeastern area. A separate, exclusive suburb has also developed in Adrianopolis, a bairro in the more elevated northeastern section of the city. Two large igarapés parallel the central urban area on the east and west and effectively separate that part of the city from the less desirable residential areas on the opposite side.

In gross numbers, the residences are evenly divided between the central area and the outer zone across the igarapés to the east and west. The state Secretary of Health took a special census in 1967 which enumerated 43,556 houses in the city, with 22,355 (51 per cent) in the surrounding outer zone. Houses were classified in five general categories: (1) two-story tile roof; (2) one-story tile roof; (3) one-story, palm-thatched roof; (4) collective--containing more than one family; and (5) under construction. The final tabulation listed only 9.2 per cent of the houses as category one (roughly equivalent to good housing); 49.6 per cent as one-story tile roof; 37.9 per cent as palm-thatched houses (very poor housing); 1.6 per cent as containing more than one family; and 1.7 per cent in

construction.[44] The outer residential zone contained 75 per cent of the houses with thatch roofs and only 40 per cent of the one-story tile roof homes.[45]

Inadequate and insufficient housing is a serious problem throughout Brazil. In a nationwide effort to improve living conditions the federal government created the National Housing Bank (Banco Nacional de Habitação) to help finance low-cost housing. A special company was organized at the state level to receive national funds and to have responsibility for their application within the individual states. In Amazonas COHAB-Am (Companhia de Habitação de Amazonas) was formed in 1967 to help alleviate the generally poor housing conditions that exist in Manaus and other urban centers in the state.

The new company undertook as its primary task the construction of 10,494 low-cost houses in Manaus during the five-year period 1968-1972. The new houses will be built in a number of housing projects around the periphery of the city. Each project is to be about equally divided into one, two, and three bedroom homes. The houses are very compact and are crammed, barracks style, into small areas with virtually no yard. The largest homes, three bedrooms, have fifty-two square meters of floor space (about 510 square feet), and the smallest plan encloses thirty-two square meters (about 314 square feet). As small as they are, the fact that they have water, electricity, sanitary


MANAUS
Commercial District
New Industrial Zone
Urban Expansion
Recreation Zone
Military Zone
0 200 400 600 800 1000
Scale in Meters
RIO NEGRO
Igarapé de São Raimundo
Igarapé
Educandos
jw

Figure 3

facilities, solid walls, and a good roof, makes them a tremendous improvement over many of the city's existing houses.[46]

The new homes are sold through a twenty-five-year financing plan with monthly payments of NCr$30 or NCr$35. Monthly payments are in current prices; if the rate of inflation is 20 per cent a year, the individual's payments are automatically increased by that amount. Families with children have first preference in buying these homes. Families that already own a house elsewhere in the city, however, are not eligible. To be eligible to buy one of these low-cost homes, the man of the family cannot be earning more than three times the minimum salary--which was NCr$91 at that time.[47]

Construction of the first project actually began in 1967, and by April of the following year new occupants were already moving into the 609 houses in the first two completed projects. Work was well under way on a third project and, if the momentum can be maintained, there is a distinct possibility that the original goals may be obtained. Similar projects scheduled for construction in four interior cities, although on a much smaller scale, are already in the planning stages.

At first glance Manaus appears to be expanding in all directions. New thatch houses seemingly sprout overnight in the rural-urban fringe encircling the city as the

flow of migrants deserting the interior continues to augment Manaus' natural growth rate. A mixture of public and private landholdings surround the city. Some new residents join existing groups already renting their homesites; others squat on public lands or private holdings belonging to absentee owners. In the latter case, the residents often hope to occupy the land long enough to establish a legal claim after fifteen years of occupancy. Some are successful; more often though, they end up paying rent or being evicted from one temporary location to another.

In reality, the city is expanding in two directions--east and west. The Rio Negro obviously prevents expansion south of the city and the area due north is preempted by recreational use. The northern zone is dissected by numerous small igarapés which are popular for weekend bathing and recreation. A portion of the area is devoted to public facilities, but the majority of it is owned by the various private social clubs that dominate social life and recreation in the city. So far, this recreation zone has continued to be an effective buffer against a northern expansion of the urban area. Growth to the west of the city is also restricted by a military zone and public facilities such as the city water supply line and reservoir. Consequently, urban expansion in this area is less significant than it is toward the east.

The northeastern section is experiencing the fastest

growth rate and every indication is that the city will continue to grow in that direction. West and slightly south of the city is the airport with the in-between area already well settled. During the latter part of 1968, a large area northeast of the airport was designated as an industrial zone, with the objective of consolidating new industry in one area instead of throughout the city as is presently the practice. The proximity to employment offered by the lightly-populated area between the new industrial zone and the city makes it a logical area for future urban expansion. New state and federal construction on the northeastern fringe of the city is also encouraging development in that direction. A new center for the state Secretary of Agriculture was completed in that area in 1968. Other sites in the same vicinity are already being prepared for a new University City and for a new INPA research center. With the river to the south, a buffer zone on the north, and restrictions to the west, the only area close to the city with a major growth potential is the northeast.

The City's Infrastructure

Manaus experienced a period of rapid urban growth during the 1950's and 1960's. The city's services were antiquated in the 1950's and, if it did nothing else, the expansion focused attention on the desperate situation in the city's utilities, transportation, educational system,

and public facilities in general. Viewed collectively, the deficiencies in the infrastructure appear almost insurmountable. Improvements are invariably long awaited and often inadequate and outdated when implemented. Accomplishments are being achieved through a series of programs, but they continue to be heavily outweighed by the continuously increasing demands.

With more than 50 per cent of the city's population living across the two major igarapés, an acute problem of accessibility exists. For the inhabitants of the west side of the city, there is only one bridge across the barrier. To get to or from that section of the city requires a long round-about trip. The other six bridges in the city cross the igarapés on the east side of town. The largest of these, a metal structure across the Igarapé dos Educandos, normally provides access between the downtown area and the airport. This bridge was declared unsafe two years ago and closed for repairs--it is yet to reopen. Again, a long out of the way trip is necessary to get from one of the largest urban areas of the city to the downtown area. The need for new bridges to facilitate intraurban transportation is very real.

Since streetcars were discontinued in the early 1950's, due to a shortage of electricity, buses have provided the bulk of the city's transportation system. The standard city bus consists of a locally-constructed wooden body attached to a truck frame--with a twenty-five to thirty

passenger seating capacity. Buses are privately owned and only minimally regulated by the city, and drivers are usually paid on a percentage basis. The result is an aggressive system where each driver tries to beat his competitors to the next stop while he overloads his own vehicle in order to carry every possible passenger. Racing is the norm and accidents are common. Bus routes and vehicles are concentrated along the city's major arteries which connect the larger neighborhoods and the downtown area. The poorer outlying bairros, which desperately need the service, are infrequently and irregularly visited--if at all.

The city's transportation system is complemented by a considerable number of taxicabs. Most of the taxis are privately owned Volkswagen sedans with the front passenger seat removed. The city also regulates taxi fares and requires that all cabs be metered. As they are everywhere, taxis in Manaus are concentrated in the downtown area. Taxi fares are reasonable, except for the tourist arriving at the airport where, for some inexplicable reason, the meter is always out of order for the trip into town and the standard fare is customarily tripled or quadrupled.

The road situation in Manaus is slowly but steadily improving. The local refinery does not produce asphalt, and stone suitable for road surfacing is a scarce commodity in this area. As a consequence, road building materials have

to be shipped in at considerable expense. In the central part of the city, streets were paved with stone during the rubber boom days. Most of these stones came from Europe as ballast in ships and they were put to good use in Manaus. Since then the main streets in the downtown area have been asphalted, as have the major roads connecting the city to the airport and other outlying areas, such as Ponta Negra, a popular beach on the Rio Negro. Most of the downtown side streets still retain their original stone paving. After more than fifty years of use they still provide a rough, bouncy ride. Away from the center of the city, most of the side streets are unpaved; the user is liberally coated with red dust in the dry season and plenty of red mud when it rains.

The city's growth rate has continued to frustrate attempts to install adequate new service facilities or to expand existing facilities. The crisis with the city's ancient steam-driven generators in the 1950's finally led to the installation of a new 22,500 kilowatt thermo-electric generator in 1962. As it was originally planned, the new generator would be able to meet expected demands until sometime during the mid 1970's, when its capacity would be increased. The original projection turned out to be somewhat optimistic as continuously increasing demand began to overtake increases in production. In the three-year period ending on December 31, 1967, the city electric company added

4,195 new consumers and increased its sale of kilowatt hours by 48 per cent.[48] The magnitude of the potential market still not being serviced was indicated in a study conducted in 1966, which reported that only 69 per cent of the city residences had electricity at that time.[49]

By the end of 1968, the electric company was forced to initiate a program of modified rationing. Public lighting in the streets and city parks was shut off in a different section of the city each evening in order for the company to meet consumer demands. Plans were also made to purchase and install another 7,500 kilowatt generator to boost production. One of the arguments presented in the decision to establish an industrial zone was that a separate generating plant would be built for the zone with the single purpose of supplying industrial needs. By attracting industry to the industrial zone, the city plant is expected to be able to meet the continuing demands for electricity--after the new generator is installed.

The city's sewage system, or rather lack of a system, has always been a serious problem. At the turn of the century, when Manaus really developed, two large igarapés that cut through the center of the city were drained and enclosed for use as storm drains. These drains empty into the Rio Negro directly under the port facilities. The city's only attempt to build a sewage system was foiled in 1911, when the local populace went on a rampage and burned the

equipment and partially completed works of an English company with a concession to install and operate such a system.[50]

Following the subsequent departure of the English company, it became common practice for the residents of the central part of the city to connect their sewer lines to the storm drain system. That practice has continued to the present day. The resulting foul smell which emanates from the drains at certain locations has caused them to be nicknamed the "wolf's mouth" by the local people. The highly polluted waters that surround the port facilities are a secondary result.

At least the residents in the central part of the city are able to utilize a makeshift sewage system. The other residents of the city are not so fortunate. In 1966, it was reported that 23 per cent of the city residents were connected to the makeshift system; 25 per cent had septic tanks, and the remaining 52 per cent utilized other facilities.[51] It is common practice for residents bordering on the numerous igarapés that wind through the city to drain their raw sewage directly into the open channel. Consequently, the igarapés are presently little better than open sewers. The lack of a sewage system also results in pollution of the subterranean water.

Like almost every other facility in the city, the water system was originally built during the rubber boom.

Initially the system was well constructed and provided for the filtering and treatment of the river water before it reached the consumer. In the ensuing years, the system gradually deteriorated; the filtering and treatment processes were the first parts to prove inadequate and were bypassed. For a number of years the water has been pumped from the Rio Negro, west of the city, into the reservoir and from there into the city line. The first major modification of the original system was made in 1950, when SESP substituted modern electric pumps for the original steam-driven pumps. At the same time SESP laid a trunk line from the reservoir to the large residential area across the igarapé to the east of the city.[52]

As the city continued to grow, new lines were laid in a haphazard fashion without benefit of a master plan for rational expansion. Water, being an absolute necessity, was made available in new neighborhoods faster than any other city service. In 1966, 75.2 per cent of the city's residences had water piped into the house; 15.6 per cent had shallow wells; 7.6 per cent drew their water from public faucets; and 1.6 per cent collected rain water.[53]

Again, the public facilities were overtaxed by a growing population. The old lines deteriorated and developed leaks. In the dry season, when temperatures soar to their yearly peak, the system cannot keep up with demands and pressure drops until only a trickle of water is going through

the lines. During the dry season, it is quite common for the water lines to be without pressure day after day. Pressure builds up during the early hours of the morning, but it dissipates rapidly after the day begins.

In a determined effort to keep some pressure in the lines during the summer of 1968, the city water department sent crews throughout the city with orders to disconnect any self-installed clandestine connections and those whose water payments were delinquent. It was a hopeless effort and, needless to say, the water pressure was not restored. When the pressure is low, water from the subsoil seeps back into the lines. The contamination resulting from a non-existent sewage system in turn pollutes the drinking water.[54]

Replacing the present conglomeration with a modern, adequate water system is one of the city and state's top priorities. According to preliminary studies the entire system will have to be replaced--which is a major undertaking in such a large city. Indications are that the mid 1970's are the earliest that the new system could be operational.

In marked contrast to the other major city services, the telephone company of Manaus does not date from the days of the rubber boom. In 1938, the Pará Telephone Company was granted a thirty-year contract to provide telephone service in the city. The company originally had a maximum installed capacity of 2,000 connections--plus extensions.[55] In 1967, in a city with more than 200,000 inhabitants, the

Pará Telephone Company still maintained a 2,000 line capacity.

In 1965, CAMTEL (Companhia Amazonense de Telecomunicações) was formed to replace the existing company when its contract expired in 1968. The new company commenced the task of installing a completely new telephone system in 1967. Facilities were installed to provide an initial capacity for 10,000 connections--with space for expanding to 20,000 as demand increased. By March of 1968, CAMTEL had installed 2,000 commercial and 3,600 residential telephones.[56] In October of that same year, the company was already making plans for the acquisition of the additional equipment necessary for expansion to maximum capacity.

The most adequately handled city service, at the present time, is the removal and disposal of garbage. The fact that the city has two systems, a natural system and an artificial one, is undoubtedly the reason for its remarkably good record in such an important area of city sanitation. The artificial system is maintained by the city government and consists of a nightly pick up, six nights a week, of all garbage in the city. It is true that some stretches may be overlooked two or three nights in a row, especially if they are in an outlying neighborhood; but the overall record of the night crew's service is quite good. Manaus also has a very active natural removal system. The city's large population of buzzards makes the rounds every morning picking

up any leftovers from the night crew. The buzzards are always on duty and their constant policing keeps the streets remarkably clear of refuse during the day.

Public Facilities

A growing population exerts pressures on city facilities for the living and for the dead. Manaus' main cemetery, an extensive area in the northern section of the city, reached its absolute capacity in October of 1968, and was subsequently closed to further burials. Faced with another crisis for which it was unprepared, the city government arranged a temporary solution while it hurriedly worked to arrange an adequate new cemetery for the city. In the meantime, new burials were directed to two small neighborhood cemeteries in the outlying bairros on the east and west sides of the city. It was finally decided to set aside a sufficient area for a new cemetery on the northeastern fringe of the city, near the new state Secretary of Agriculture facilities.

One aspect of city development that seems to have kept pace with the city's growth is the popular practice of creating new parks (praças). The city has a large number of praças and, in the pre-television society of Manaus, they still retain their traditional popularity and are heavily frequented. During the day their shade provides a welcome respite from the hot equatorial sun. In the evenings the praças are popular as a cool place to sit and visit, while

observing the night life of the city and waiting for the houses to cool off. The largest and best maintained praças are in the center of the city. One of the most attractive is the Praça de Saudade in the "better" residential area just north of the commercial zone. The Praça de Saúde, on the hill at the north end of the central commercial area, and the Praça Oswaldo Cruz, which surrounds the "cathedral" between the downtown area and the port of Manaus, are also very popular.

The old Opera House, or Amazonas Theater, as it is now called, continues to function as a public center for community events. The theater has been renovated three times in the past sixty years--always with the objective of maintaining it as nearly original as possible. As the site for touring concerts, theatrical performances, lectures and public meetings of all sorts, the theater has managed to retain its position as the main public center and primary attraction of the city--even though it has deteriorated somewhat from its former days of elegance.

Although Manaus does not have a television station, it does have nine movie theaters. Four of the theaters are located downtown while the remaining five are scattered among the larger bairros. Movie-going is a very popular pastime in Manaus as the long lines of eager patrons clearly demonstrate each time there is a change in programs. In a city with a constant high humidity and no refrigerated

cooling in the movie theaters, it takes a hardy breed, or determined fan, to wait in line for thirty minutes to an hour, literally push through the other struggling fans to get inside, and then sit or stand in a super-heated room for an hour and a half "sweat bath" while reading the subtitles of a foreign-made movie. The continued popularity of movies, in view of these conditions, either indicates the existence of avid movie fans or the non-existence of alternate forms of entertainment and recreation in the city.

The only recreation which can outdraw a new movie is a soccer game (futebol). In a country which appears to have a passion bordering on outright mania for soccer, there is no substitute or competition for a soccer game. Manaus has four professional soccer teams competing against each other, against teams from neighboring towns, territories, and states, and against the real professionals from southern Brazil who occasionally fly to Manaus for exhibition games. Consequently, there is a game at least once a week or, more commonly, one during the week and one on the weekend. With this great enthusiasm for soccer, the motivation behind a recent decision to construct a new soccer stadium, at a reputed cost of a quarter of a million dollars, is obvious. Although the city may be lacking in other amenities, it will soon have a soccer stadium worthy of city pride.

Most of the recreation and social life in Manaus is centered around private social clubs. These clubs are very

popular and range from the formal and exclusive Rio Negro Club to the all inclusive neighborhood associations in the poorer bairros. Most of these clubs have their own private recreation areas, with swimming pools and sport fields where the members relax on weekends. There are also several public recreation areas in the immediate vicinity of Manaus. The most popular is Ponta Negra, a large beach area on the Rio Negro about eight kilometers from the city. The Cachoeira de Taruma, a swift running stream with a small waterfall, is a relaxing site for weekend picnics and swimming parties. Parque 10 de Novembro, a municipal recreation area north of the city, is well utilized, but primarily by people who cannot afford to belong to a social club.

Medical services in Manaus derive from a combination of federal, state, and private efforts. Even so, the medical assistance provided by this combined force is woefully inadequate for the population it serves. The federal government operates a tuberculosis sanitarium in the city. The state of Amazonas maintains: one general hospital (150 beds); a maternity hospital (70 beds); a children's hospital (55 beds); an isolation ward for contagious diseases (20 beds); a mental hospital with 360 patients living in horrible conditions; and a leprosy colony with 1,300 patients. The state also supports ten dispensaries scattered throughout the city. Two private hospitals, with a total of 250 beds,

complete the city's facilities.[57]

Medical treatment at the state maintained hospitals and dispensaries is without charge, but conditions and service are often deficient. Although facilities are utilized at maximum capacity, they are still unable to cope with the constantly growing demand. Dispensaries are customarily the scene of long lines and crowds of people waiting, sometimes for hours and even occasionally for days, to receive medical aid. Even for the more serious cases that are eventually admitted to the state hospitals, the over-crowded conditions usually result in long periods of inattention and even superficial treatment. Getulio Vargas, the state's general hospital, has a reputation for neglect and poor treatment among many of the city's poorer inhabitants. Many of these people only turn to the hospital as a last resort when they are unable to raise the money to pay for treatment at the private hospitals--both of which are held in much higher esteem than the state hospitals.

The problem of inadequate medical facilities is compounded by the almost complete non-existence of similar services in the interior of the state. Not only must these facilities serve the city's population of over 225,000, but they also are the focal point for sick and injured people coming from the interior in search of medical assistance. The magnitude of the lack of medical assistance in the interior, and the resulting flow of patients to Manaus, is

reflected in the shortage of qualified doctors outside of the capital city. In 1968, there were one hundred and twenty-six practicing doctors in the state of Amazonas, of which one hundred and thirteen were located in the city of Manaus.[58]

The concentration of medical doctors in Manaus has not resulted in reduced fees for their services. In 1968, the fee for a consultation with a private doctor seemed unreasonably high in Manaus. In July of that year the standard fee, according to signs posted outside medical offices, was NCr$20 a visit--at a time when the minimum wage was NCr$91 a month. For a great many of the city's inhabitants, NCr$20 is an exorbitant fee and they are either forced to endure the long waits at the dispensaries or rely on the advice of friends, who may have had what they think is a similar illness, or pharmacy owners. Fortunately, medicine and drugs in Brazil are excellent in quality and reasonable in price because both are strictly controlled by the federal government. Any medicine can be purchased without a prescription and injections are commonly given in pharmacies. Consequently, a person who cannot afford to go to a doctor will often go to a pharmacy, describe his illness to the proprietor, and rely on his judgment to prescribe "something" to make him feel better.

The educational system in Manaus is in as dire a condition as any other system in the city and for the same

general reason--too many people and too few resources. Ideally a student would progress through a three-stage program consisting of: primary school; secondary school or middle level; and superior level (university). The program is markedly different at the secondary level from that used in the United States. The secondary program in Manaus can lead to a terminal degree via separate school programs emphasizing industrial courses, technical-commercial courses, or normal schools for the training of elementary teachers. The secondary program can also be pre-university training, if the student attends the gymnasium (college preparatory school). The ineffectiveness of the educational system in reaching the population of Manaus was revealed in a city survey taken in 1966 which reported that 56.9 per cent of the population had never completed primary school and only 4.4 per cent of the population had finished secondary school.[59]

In 1966, the ninety-two separate primary schools in the city of Manaus had a combined enrollment of 34,365. Approximately 12 per cent of these students attended parochial or private secular schools. At the secondary level, twenty-six schools (nine public, eleven parochial, and six private secular schools) attended to the 15,687 secondary students in Manaus. The University of Amazonas, a federally maintained university, completed the system with a total enrollment of slightly more than 1,000 students.[60]

It is readily apparent to anyone walking through the streets of Manaus that a considerable number of school age children are not attending schools. It is also possible to arrive at a close approximation of the number of children receiving no formal education, either as a result of quitting school after a few years, as is often the case, or from never having started. The 1960 Census of Brazil listed 32 per cent of the population of Manaus as being between the ages of five and seventeen--the years most likely to be spent in school.[61] Assuming that the proportion of the population in each age group remained approximately the same, there were 70,400 school-age children in the city in 1966. Of these approximately 70,400 children, only 50,052 or 71 per cent were enrolled in a primary or secondary school.[62] The remaining 29 per cent, some 20,000 children, were without the benefit of formal schooling in 1966.

The immediate prospects for a better educational system in Manaus are bleak indeed. In 1968, the city schools were operating on double sessions with half of the students attending classes during the morning hours and the other half attending in the afternoon. Classes were also being held in the evening for secondary students who worked during the day. Aside from the fact that there is not enough classroom space to accommodate the existing school-age population, the system has other serious deficiencies. Teachers' salaries are unbelievably low and their working

conditions are generally comparable to the salaries. There is also some concern among parents and teachers about how much a child can learn during a four-hour school day in a seven-and-a-half-month school year.

The Urban Population

Brazil is often pointed out, and justifiably so, as one of the countries with the fastest growing population in the world. As a developing country, it characteristically has a high birth rate and a high mortality rate. The reduction of the latter has been primarily responsible for the overall increases in the rate of growth. Between 1950 and 1960 the population of Brazil increased at a rate of 3 per cent a year.[63] During this same period, the population of the state of Amazonas increased 3.3 per cent a year.[64]

The city of Manaus has experienced almost three decades of substantial growth. In the first decade the population jumped from 66,854 in 1940 to 110,678 in 1950--a 65.5 per cent increase. At the end of the second ten-year period, the city recorded a 39.1 per cent increase in population for a total of 154,040 residents in 1960.[65] A special city census in 1967 enumerated 228,313 inhabitants--a 48.2 per cent increase in seven years.[66]

The migration from rural to urban areas is a world-wide phenomenon and one that is contributing strongly to Manaus' continued growth. Unfortunately, it is impossible

to accurately ascertain the proportion of the city's growth resulting from migration at any given time during the interim between national censuses. The 1960 Census of Amazonas listed 60,302 persons as living in a county (município) other than where they were born, for ten years or less. In that ten-year period 20,814 of these people, 34.5 per cent of the state total, had relocated to the município of Manaus. It is also noteworthy that 51.4 per cent of the new residents were females.[67]

One characteristic of the Manaus population that emerged from the special 1967 census was the relatively high percentage of females in the city's population. Urban populations in Brazil are generally characterized by a higher proportion of females than males. In part, this is due to the selective nature of migrations to urban areas; unskilled females, who can work as domestics, are usually in greater demand than their counterpart--the unskilled male. In 1960, urban populations in Brazil averaged ninety-three males for every one hundred females.[68] In Manaus, in 1967, the ratio was eighty males for every one hundred females, with females constituting 55.42 per cent of the city population.[69]

In Manaus' case, the disproportionate number of females is also partly explained by local economic conditions. A considerable amount of the regional economy is based on extractive activities--the collecting of forest

products. The economically active males, in the segment of the population dependent upon collecting for its livelihood, spend most of the year working in the interior, while the rest of the family remains in the city. In one of the poorer neighborhoods of the city, where such families customarily live, 71.3 per cent of the inhabitants were females.[70]

The Brazilian population is also characterized by a high percentage of young people. In 1960, the nation's urban areas had a population with 48.6 per cent of the people under twenty years old; nationwide the percentage was 52.9.[71] The population of the state of Amazonas exceeded the national average in both categories. In Amazonas 55.9 per cent of the population in urban areas was less than twenty years old and for the state as a whole this figure reached 57.6 per cent.[72]

The combination of a young population and a high growth rate in Amazonas can only result in greater pressures on the already seriously inadequate and overtaxed educational system. Under such circumstances, it is unlikely that much progress can be made in reducing the present high rate of illiteracy. In 1960, 57 per cent of the population over five years old was illiterate in Amazonas. In view of the acute shortage of educational facilities in the interior of the state, it is remarkable that 43 per cent of the population was able to read and write. Urban areas have a

better record of literacy, even in Amazonas, and Manaus is no exception. In the município of Manaus, which includes the city and surrounding rural areas, only 31.3 per cent of the population over five years old was illiterate.[73]

Unemployment and underemployment are common problems in a society with a preponderance of young and unskilled labor. In a survey taken in 1966, the economically active population of Manaus, that portion of the population between the ages of fourteen and sixty-five physically able to work, totaled 122,714. The youngest age group, fourteen to twenty-five, accounted for 42.2 per cent of the potential work force; the oldest group, fifty-five to sixty-five, included only 6.4 per cent. The results of that survey reported 26.6 per cent of the economically active population of the city as being unemployed--mainly those in the youngest age group (21.7 per cent).[74] Unfortunately, the study did not attempt to enumerate the percentage of underemployed which must be phenomenal. With 43 per cent of the city's population presently less than fourteen years old and many of them preparing to enter the already flooded labor market in the next few years, employment prospects for the future are certainly not favorable.

The general low level of education and the high percentage of unskilled workers in the Manaus labor force are reflected in the average monthly income of employed workers. In 1966, when the minimum monthly salary was

NCr$61, 17 per cent of those employed were paid less than the minimum and 63.5 per cent were receiving less than NCr$100 a month. At the other extreme, 0.4 per cent of those employed were making NCr$1,000 or more and 3.1 per cent were averaging between NCr$500 and NCr$1,000.[75]

The average monthly income is just as disproportionate when viewed on a family basis. The monthly income of 8.6 per cent of the families in Manaus, at that time, was less than the minimum salary and no fewer than 38.7 per cent of the families had average incomes of under NCr$100 a month. While 67.8 per cent of the families in the city averaged less than NCr$200 each month, 12.8 per cent exceeded NCr$400 and 1.6 per cent averaged NCr$1,000 or more.[76]

It is readily apparent in Manaus to even the most casual observer that education, economic well-being, political power, social position, and all the other amenities of life are concentrated in the hands of a very small group of city residents. While this small elite group enjoys the proverbial "finer things in life," the vast majority of Manaus' residents are engaged in a daily struggle to house, feed, and clothe their families and themselves, in a city where the cost of living is high, salaries are low, and hope for the future is very slim. The polarization of wealth and power on one side and misery and neglect on the other continues to be a very serious social problem in Manaus and elsewhere in Brazil.

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REGIONAL TRANSPORT IN A TROPICAL ENVIRONMENT

Rivers: A Natural System

> The Amazon then looks to me, properly symbolical, as a monstrous tree, and its tributaries, paranas, furos, and igarapés, as the great bough, little boughs, and twigs of its ascending and spreading ramifications, so minutely dissecting the continent with its numberless water-courses that the mind sees that dark region as an impenetrable density of green and secret leaves; which, literally, when you go there, is what you will find. --H. M. Tomlinson[1]

The rivers that jointly drain the Amazon Basin constitute an extensive natural system of transport. The Rio Amazonas-Solimões provides over 3,300 kilometers of permanently navigable waterways within Brazilian territory and is the trunk of the system. The upper extent of navigation on the tributary rivers is determined by cataracts and the annual fluctuations of these rivers. Cataracts at Pôrto Velho, some 1,100 kilometers above the river's mouth, mark the uppermost limits of navigation on the Rio Madeira. Although the river is traversed throughout the year, large ships can only go as far as Pôrto Velho when the river is at flood stage. During periods of low water, only shallow-draft boats can reach the city. When the Rio Purus is in flood, boats can go upstream as far as Sena Madureira, over 2,900 kilometers.

The northern and southern tributaries of the Rio Amazonas do not reach their respective flood stages at the same time. The headwaters of the northern tributaries lie north of the equator while those of the southern tributaries are all south of the equator. As a result of the migration of the Continental Equatorial Mass, the southern portion of the basin receives the major portion of its rain during the southern summer, and the northern portion experiences this effect during the northern summer. Fed by two enormous river systems which reach their peak flood stage at different times of the year, the Rio Amazonas maintains a relative stability--with a much smaller range of fluctuations than if it were supported by a single system. The annual flooding of the Rio Amazonas results from the normal overlapping of the flood waters from the two systems.[2]

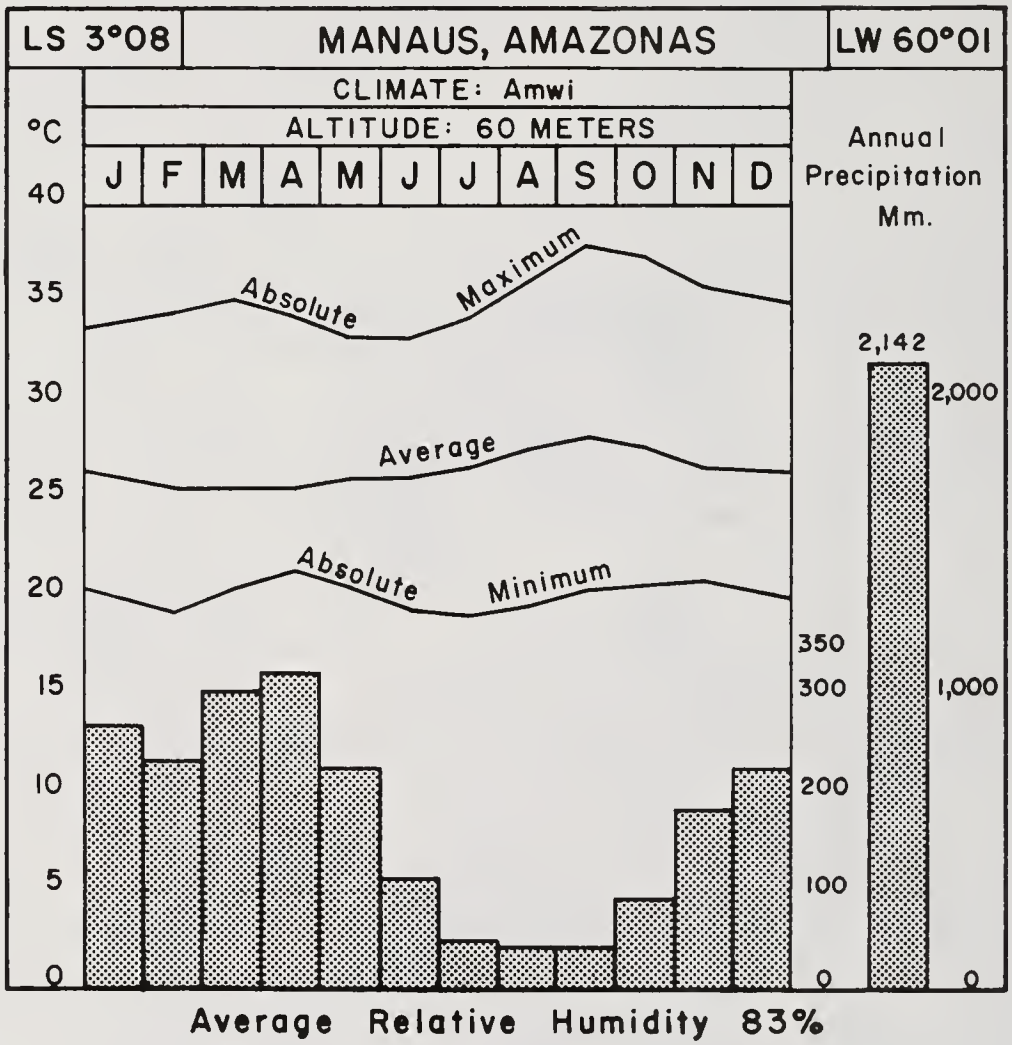
Fluctuations in the water level of the Rio Amazonas are accurately measurable in the Port of Manaus, eleven kilometers above the juncture of the Rios Amazonas and Negro. In the sixty-four years since the port began operating (1903), the highest flood stage of the river was recorded during the disastrous flood of 1953, when it reached 29.69 meters above sea level.[3] The lowest level of the river, 13.64 meters, was measured in November of 1963.[4] The maximum recorded range in fluctuations was 16.05 meters, while the average yearly range during this period was 10.21 meters. Maximum flood stage at Manaus is invariably attained in June or July. The

annual low-water mark usually occurs in October or November; five times in the last sixty-four years the minimum level was reached in December.[5]

Amazonia's tropical climate creates special problems for transportation. Fluctuation in water level either permits or impedes fluvial access to communities located up river on the innumerable tributaries. High rainfall and the rapid regrowth of vegetation complicate construction and maintenance problems for roads and airports in the region. Unfortunately, reliable meteorological information is still seriously lacking in Amazonia. Manaus is one of the few regional stations adequately equipped and staffed to gather accurate meteorological data. In the ten-year period 1958-1967, the mean temperature in Manaus was 27.3°C. (81.1°F.), relative humidity averaged an uncomfortable 83 per cent, and yearly precipitation totals averaged 2,142.3 millimeters (84.3 inches).[6] See Figure 4.

In 1900, Manaos Harbour Limited, an English firm, was granted a seventy-year concession to construct and operate the Port of Manaus. The new port facilities began to function in 1903, and quickly became a symbol of the city's progressive development. To accommodate the harbor's yearly fluctuations, ranging from six to sixteen meters, the new company designed a system of floating docks. The docks were constructed on a series of large steel drums anchored in the harbor. The first dock, two hundred and sixty-one

METEOROLOGICAL NORMS FOR MANAUS
1958-1967



Source: Regional office of Instituto Brasileiro de Geografia e Estatística.

Figure 4

meters long, had three permanent towers on it. Aerial tram lines, from the towers on the dock to the warehouses ashore, transferred cargo back and forth.

The second floating dock, two hundred and fifty-two meters in length, is firmly attached to shore by a two hundred and fifty meter floating roadway--making it resemble a giant floating T. A dual system of railways was originally laid on the dock, roadway, and into the warehouses. After the small rail cars were loaded with freight, a system of cables and winches pulled them up the roadway and into the warehouses. The grade from the dock, up the roadway, is very slight during periods of high water, but it becomes quite steep when the water level reaches its annual low.

The average depth of water at the floating docks is thirty-five meters, which makes them accessible to large ships throughout the year. During the low-water period, from September to March, the docks can accommodate eight ships at a time. An enormous stone wall runs along the front of the harbor, facing the floating docks. During the high-water season, from April to August, this wall provides an additional five hundred meters of s docking space, and the port can handle thirteen ships at the same time.[7]

Like most of the city's other facilities, which originated during the rubber boom years, port equipment gradually wore out and was not replaced, modern methods of cargo handling were never introduced, and a gradual

deterioration of the port took place. With their concession scheduled to expire in 1970, and with no hope of having it renewed, Manaos Harbour Limited became increasingly reluctant to invest additional funds in the facilities. Instead, they resorted to a holding action, doing only what was absolutely necessary to keep the port facilities operating. In April of 1963, the federal government intervened, abrogated the original contract and assumed control over the Port of Manaus.[8] The port is presently under the direction of the National Department of Ports and Navigable Waterways.

The new administrators initiated an ambitious program of reorganization and modernizing of the port facilities. One of the first improvements was the replacement of the fixed system of cable cars on the main dock, roadway, and warehouses with more flexible tractor-drawn trailers. However, of the original nineteen tractors, five are no longer operational. The administration is expanding its training program to reduce the problems of inadequately trained personnel.

On the second dock, one of the three towers is out of order and cannot be repaired because parts are no longer available. The other two towers are antiquated but continue to operate until a better system can be employed. A temporary floating bridge is being used to connect the two docks, which enables the tractor-trailer system to be used

on both docks. The old wooden-plank surface of the docks and the roadway was replaced by concrete in 1968, and another floating roadway, providing a direct connection between the second dock and the warehouses, was almost completed at that time.

In 1967, the port owned a total of six forklifts and palletizing was only possible for a very limited amount of the cargo entering and leaving the port. Virtually all freight is still loaded and unloaded by hand in the warehouses and on the docks; damage to merchandise is common, handling and processing is slow, and costs are high. The new administration is trying to repair and improve existing warehouses while making plans to expand their storage capacity. The port presently has fifteen warehouses with a total of 18,807 square meters of floor space and 95,093 cubic meters of storage space.[9] It does not have any cold storage warehouses nor any bulk storage facilities for liquids. The Port of Manaus does have an aggressive, military administration which is determined to bring it up to modern standards. In view of the rapid pace of port improvements in Manaus, this appears to be a distinct advantage in a country controlled by the military.

With the installation of modern facilities in 1903, Manaus acquired the dual role of river and seaport. The port handles four categories of merchant shipping: (1) long course (longo curso) between Brazilian and foreign ports;

(2) large coastal shipping (grande cabotagem) between Brazilian ports and including ports in the Rio Plata and the Guianas; (3) small coastal shipping (pequena cabotagem) between Brazilian ports, with four hundred and sixteen kilometers as the maximum distance between ports of call, and no further than thirty-three kilometers from the coast of Brazil; and (4) interior (interior) in the rivers and lakes of one or more Brazilian states.[10]

A number of companies engaged in longo curso and grande cabotagem shipping maintain office in Manaus. The most important of these is Booth Brasil, Limited, which imports and exports to and from Europe and the United States. The company has twelve ships calling at Manaus on a regular basis. Six of these ships operate between Amazonia and the United States, and one is scheduled to arrive in Manaus every fifteen days. The other six connect Europe and Amazonia, with one due to arrive in Manaus every twenty days.

A second company, Companhia de Navegação Maritima Netumar, ships to and from southern Brasil, Argentina, and the United States. It has ships arriving in Manaus twice a month. Lloyd Brasileiro ships between Amazonia and southern Brasil with stops at all the major ports between Manaus and Porto Alegre. The Companhia de Navegação da Amazonia combines grande cabotagem to southern Brasil and shipping within Amazonia. Other firms have ships arriving on an irregular basis and ships with special cargos arrive from all over the

world on an occasional basis. Much to do was made of the first Turkish ship to dock in Manaus when it arrived in 1968 with a load of cement. The establishment of a seaport at Manaus was a major development in the evolution of the city, and it continues to be one of the most important factors influencing the local economy.

Centrally located in Amazonia and accessible to large ocean-going vessels, Manaus functions as a break of bulk point for shipments arriving by freighter. These goods are redistributed to smaller, shallow-draft vessels for delivery into the interior--via the natural waterways. On their return trip, these smaller vessels carry regional products from the interior to Manaus; from there they are exported to southern Brazil and foreign countries. The variety of vessels engaged in this interior and pequena cabotagem is almost unbelievable. Some of the more common ones are: vaticanos, 800 to 1,000 ton ships with three decks and ample cargo and passenger space; gaiolas, between 200 and 500 tons with two decks; chatinhos (paddlewheelers), 80 to 100 tons, shallow draft and two decks; lanchões, a small version of the gaiolas; lanchas, generally less than 20 tons--these are the real load carriers, carrying passengers and cargo to every corner of the region; and motores, very small boats, mainly for personal use, propelled by a small motor.[11] The vaticanos and gaiolas, due to their deeper draft, can only go into the upper reaches of the major rivers in flood season. The

shallow-draft chatinhos and lanchas, however, are relatively unrestricted by low water.

The largest shipping line with operations exclusively in Amazonia is ENASA (Empresa de Navegação da Amazonia, S.A.). The company has shipping lines originating from Belém and Manaus. Eight of their ships are based in Manaus and the company provides more or less regular passenger and cargo service to: Rio Branco--once or twice a month, depending on cargo; Rios Solimões, Japurá, Içá, and Javari, a combined route requiring approximately forty-five days; and to the Ric Purus--depending on cargo. Service on the Rio Madeira originates in Belém with Manaus as a port of call on the twice monthly trip to Pôrto Velho. Service is best and most frequent along the Rio Amazonas, where the majority of the region's population is located.

A countless number of small, privately-owned boats also ply the river trade. Some operate regular lines carrying passengers and cargo between Manaus and communities located on the upper and lower Rio Amazonas. Others alternate, with the high water, between the upper reaches of the northern and southern tributaries. It is only during these periods of high water that boats can get supplies into communities located on the headwaters of these tributaries. They return loaded with local products--destined for the markets in Manaus.

> The complex interrelations between imports, exports, supplies to the interior, and production from the interior, all dependent on the water level in one way or another, form a delicate balance.[12]

The distances involved in some of these supply lines are astronomical. One of the longest lines from Manaus, when the water is sufficiently high, is up the Rio Juruá to Cruzeiro do Sul, a community on the border of Acre and Amazonas, a distance of 3,991 kilometers--one way! Only slightly shorter is the route, via the Rio Purus, to Brasileia, Acre, some 3,211 kilometers.[13] Fluvial transportation is an inexpensive means of transporting bulky and low-value products; it is also a slow system of transport. The trip by boat from Manaus to Eirunepé, on the Rio Juruá, 3,192 kilometers distant, requires nineteen days and ten hours to get there and eleven days and twenty-one hours to return. A less extreme example is the time required to go by regular boat from Manaus to Parintins, some 457 kilometers down the Rio Amazonas. It still takes two days and ten hours to get there and three days to return.[14] Traveling by boat within Amazonia requires a considerable amount of waiting, due to the irregular schedule of boats, and an infinite amount of patience once on board the slow-moving, frequent-stopping vessels.

The vastness of Amazonia, the difficulties involved in penetrating the natural vegetation, and the existence of an extensive natural waterway, all combine to force an

almost absolute reliance on fluvial transportation. This natural system of transportation lies on an east-west axis which extends across the northern portion of an enormous country spread out along a north-south axis. This exclusive dependence on the existing river network as the only system of transportation has resulted in regional isolation of Amazonia from the rest of Brazil; and it has certainly been a contributing factor to the maintenance of a colonial economy in Amazonia.

Air Transportation: An Integrating Force

Commercial air transportation to Amazonas commenced in 1933. In that year Panair do Brasil initiated regular flights between Belém and Manaus with intermediate stops.[15] With landing strips nonexistent in interior Amazonia, Panair employed amphibious airplanes to provide service in the region. These amphibious crafts utilized the extensive river system for landing strips; thereby enabling the company to initiate commercial service, without being burdened by the expense of constructing or maintaining regular airfields.

Panair eventually extended amphibious service to all of the larger communities in Amazonia. In 1958, six lines originating in Manaus regularly serviced Western Amazonia. The flights, with stops at the larger intervening communities,

went from Manaus to: (1) Belém; (2) Iquitos, Peru; (3) the upper Rio Negro region; (4) Pôrto Velho; (5) Rio Branco; and (6) Cruzeiro do Sul.[16] Amphibious airplanes were an ideal solution to early air transportation problems in Amazonia. Interior communities were all located on rivers or lakes, which provided a natural medium for landing. Although these planes have a limited carrying capacity, this limitation presented few problems in the early days of air transportation in Amazonia.

In 1945, a second company, Cruzeiro do Sul, inaugurated a commercial line connecting Manaus to Rio de Janeiro and São Paulo, via Pôrto Velho. Two years later, the company extended service to Boa Vista. Capitalizing on the landing strip constructed in Manaus during World War II, Cruzeiro do Sul operated conventional airplanes, mainly DC-3's, capable of landing and taking off from short, relatively unimproved landing strips. These planes are capable of carrying a larger payload, both passenger and cargo, than the amphibious crafts. Their use was initially restricted, however, by the number of landing strips in the region.

In 1965, Panair do Brasil, confronted with a severe financial crisis, closed its doors and went out of business. Three Catalinas (amphibious planes) were still flying an average of seven hundred and fifty hours per month from Manaus to the interior when the company went bankrupt. These World War II vintage planes were constantly plagued with

breakdowns. When Panair ceased operations, Cruzeiro do Sul assumed the defunct company's routes. The federal government required that Cruzeiro do Sul maintain all existing service lines in Amazonia, even though the planes were outdated and uneconomical to operate. Cruzeiro do Sul began actively substituting DC-3's for Catalinas, by using new landing strips, and reduced the amphibious crafts to two hundred and fifty hours per month. In October, 1968, one of the two remaining crafts crashed while attempting to land on an interior river in Amazonas. The crash killed four passengers, destroyed the plane, and marked the end of commercial amphibious air service in Amazonia--after thirty-five years of valuable service.[17]

The Manaus airport, Ponta Pelada, is the only one in the state of Amazonas with a paved runway. The others are unimproved strips, cleared from the surrounding forest and leveled. During the rainy season, some of these strips, such as the new ones at Tefé and Maués, become quagmires of red earth, and planes are unable to land for weeks at a time. The only other paved runway in Western Amazonia is the recently paved one at Boa Vista. Only a portion of the Rio Branco airport is paved, with locally-manufactured bricks, and Pôrto Velho still relies on an unimproved strip. A specially created federal commission, COMARA (Comissão Para Aeroportos no Amazonia), is working to open up new landing strips in Amazonia. Weather permitting, regular flights are

now servicing twenty-four landing strips in Western Amazonia and the number is increasing every year. See Figure 5.

The runway at the Manaus airport was enlarged in 1953, to its present size, 2,000 meters long and forty-five meters wide. Terminal facilities were improved at the same time, and it was designated an international airport. At present, the largest airplanes the airport can accommodate are medium size commercial jet aircrafts.[18] The runway is not long enough to handle the larger jets such as DC-8's. Plans are completed to lengthen the runway an additional one thousand meters, which is the maximum extension possible due to the local topography. There is also some discussion about eventual construction of a new international airport in a more convenient nearby location. So far it has not advanced beyond the discussion stage.

Five airline companies, Avianca, Varig, Vasp, Paraense, and Cruzeiro do Sul, provide a variety of international, national, and regional commercial air service to the inhabitants of Manaus. Avianca, Varig, and Cruzeiro do Sul all have international flights. Avianca, a Colombian airlines, has a round-trip flight, once a week between Bogota and Manaus, with a stop in Leticia. Varig Airlines connects Manaus with Caracas and Miami on its weekly round trip between Rio de Janeiro and Miami. Cruzeiro do Sul flies once a week from Manaus to Georgetown, Guyana and back, via Boa Vista.

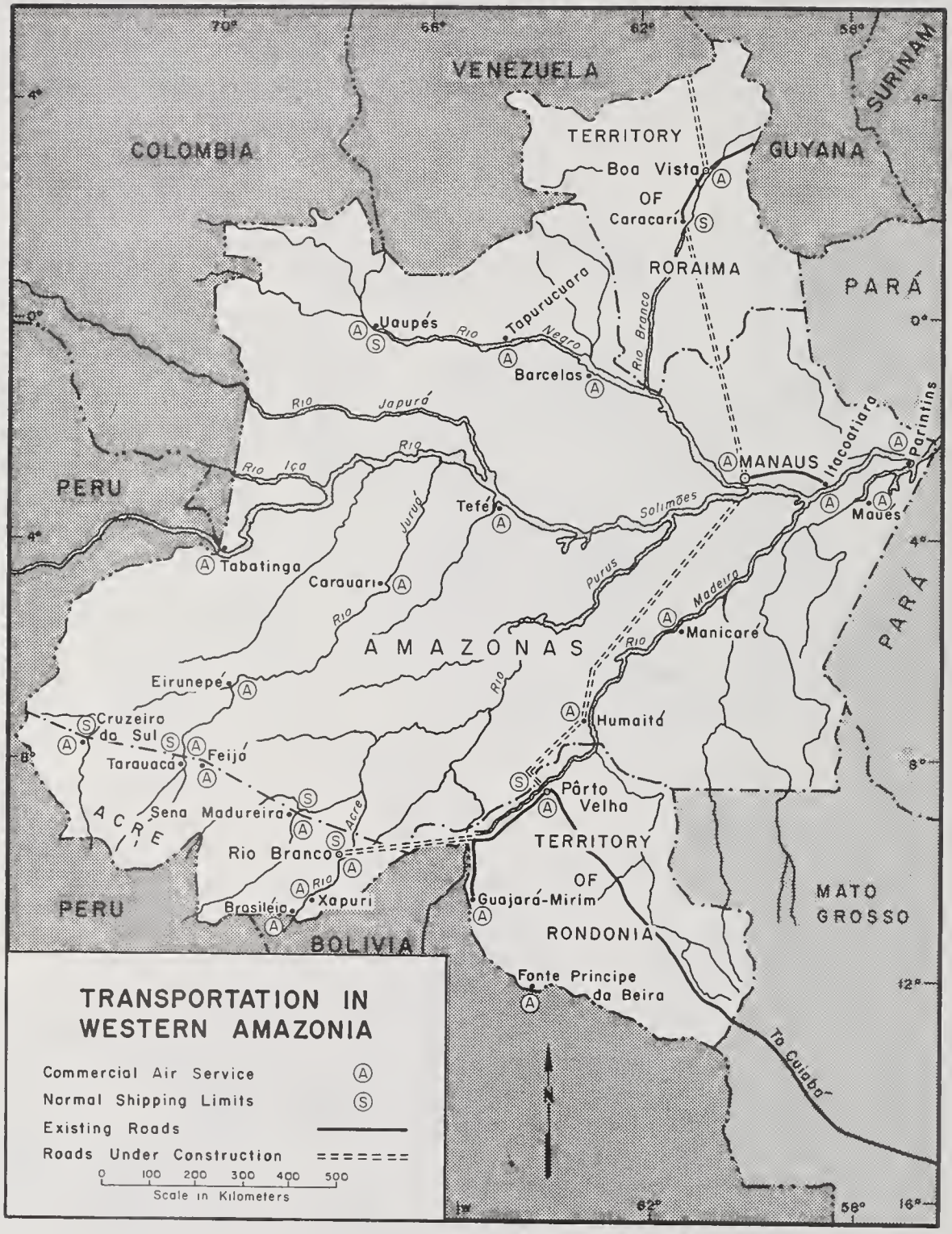

VENEZUELA
COLOMBIA
SURINAM
GUYANA
TERRITORY OF RORAIMA
PARÁ
Boa Vista
Caracari
Uaupés
Rio Tapurucuara
Rio Negro
Rio Branco
Barcelos
Rio Japurá
Rio Içá
PERU
Tefé
Rio Jurua
Rio Solimões
MANAUS
Itacoatiara
Parintins
Maués
Tabatinga
Carauari
Rio Purus
Rio Madeira
Manicoré
AMAZONAS
Eirunepé
Rio
Humaitá
Cruzeiro do Sul
Tarauacá
Feijó
Pôrto Velho
Sena Madureira
Rio Acre
ACRE
Rio Branco
Rio
Xapuri
Brasiléia
PERU
BOLIVIA
TERRITORY OF GUAJARÁ-MIRIM
MATO GROSSO
RONDONIA
Fonte Principe da Beira
Rio Cuiabá
70°
66°
62°
58°
4°
0°
8°
12°
16°
TRANSPORTATION IN WESTERN AMAZONIA
Commercial Air Service
Normal Shipping Limits
Existing Roads
Roads Under Construction
0 100 200 300 400 500
Scale in Kilometers
N

Figure 5

With the exception of Aviança, all of the airlines have national flights connecting Manaus to southern Brazil and/or the Northeast. Paraense links Manaus to Belém and to Cuiabá, Mato Grosso. Varig, Cruzeiro do Sul, and Vasp all provide flights to Rio de Janeiro and São Paulo. They offer either direct flights between Manaus and southern Brasil, via Brasilia, or indirectly through Belém. Commercial air service between Manaus and southern Brazil is excellent. Several flights are available every day and there are a variety of planes and prices for these flights.

The continuous inflation in Brazil requires frequent price adjustments and air fares are no exception. In March, 1968, air fares increased 10 per cent in Brazil. At the same time a new airport tax of NCr$3 for domestic flights and NCr$10 for international flights was initiated. The avowed purpose of the new tax is to maintain and improve existing airport facilities. In December, 1968, an additional 22 per cent fare increase on all domestic flights was authorized by the government. Brazilians are inured to constant price increases, even for airline fares, and, on the whole, accept them stoically.

Within Amazonia, Cruzeiro do Sul dominates commercial air service. A list of weekly round-trip flights originating in Manaus, and their frequency, reflects the company's coverage of the region. From Manaus, conventional planes carry passengers and cargo to and from: (1) the upper Rio

Negro region--1; (2) the upper Rio Amazonas to Leticia--1; (3) the upper Rio Amazonas to Cruzeiro do Sul--1; (4) Boa Vista--3; (5) the lower Rio Amazonas--5; (6) Pôrto Velho--7; and (7) Rio Branco--a continuation of the Pôrto Velho flight--6.[19]

The Cruzeiro do Sul operation in Amazonia is heavily subsidized by the federal government under a program entitled the National Integration Network (Rêde Integração Nacional). The federal government, which controls air fares, keeps passenger transportation prices artificially low in Amazonia to help facilitate transportation in the area. The cost of maintaining the interior landing strips, private radio communications, and personnel in each community with an airfield is excessive. Even with the federal subsidy, the Cruzeiro do Sul company loses money on its Amazonian operation.[20]

Cruzeiro do Sul does not fly any regular cargo flights in the region; instead it combines cargo and passengers on the same flight. Paraense, a relatively new company, started as an Amazonian cargo carrier and has now expanded to include passenger service. It is expanding its service in the area and increasingly competing with Cruzeiro do Sul for the regional traffic.

Since Cruzeiro do Sul assumed Panair's old routes, the new company has worked for complete substitution of DC-3's for the antiquated Catalinas. The goal was officially

achieved in October, 1968, when commercial flights were permanently suspended for the remaining amphibious plane. The DC-3's have been a real work horse in the air transportation system in Amazonia; but, like the Catalinas they replaced, they too are now showing their age. Cruzeiro do Sul, and some of the other companies, are now substituting new turboprop planes for the aging DC-3's. In November, 1968, two new Japanese-made turboprops had already replaced the DC-3's on the Boa Vista flights and on most of the flights between Manaus and Belém. Turboprops were scheduled to start on the heavily trafficked Manaus to Pôrto Velho-Rio Branco line by the first of 1969.

The turboprops are much faster than the older DC-3's and can carry more than twice the payload. Unfortunately, for the local residents, the introduction of the newer planes has been accompanied by higher fares and often by reduced service. The new planes can carry twice as many passengers as the old ones, so the number of flights per week are often reduced. The new aircrafts are not quite as adaptable as the DC-3's and cannot use some of the more precarious landing strips. The result for such communities as Maués and Parintins, whose inadequate landing strips are on the new turboprop routes, is a reduction in total service. Flights by DC-3's have been reduced to once a week to keep from duplicating the turboprop flights which are servicing the same line, but are unable to land in these communities.

As the needed modernization of airline fleets continues, a corresponding improvement in existing fields becomes ever more urgent.

As the increase in airlines indicates, Manaus has experienced a marked increase in commercial air traffic in recent years. In May, 1955, the airport recorded 228 airplanes, landing or taking off, 2,351 passengers and 149,229 kilos of cargo.[21] Thirteen years later, May, 1968, the airport processed 676 airplanes, landings or take offs, 9,316 passengers, and 246,660 kilos of cargo.[22] Recent increases in passenger traffic have continued to be impressive. In 1964, 40,803 passengers embarked from Manaus while 41,547 disembarked. Four years later, 1967, embarking passengers totaled 53,552, and disembarking passengers reached 52,949.[23]

There was not, however, a corresponding increase in cargo handled by the Manaus airport during these same four years. In 1964, the airport received 1,934,942 kilos of cargo and shipped 1,348,469 kilos. The figures, for 1967, show a decline to 1,780,483 kilos received and 686,873 kilos shipped.[24] When the figures are available for 1968, they should indicate a considerable increase in incoming air cargo. A tremendous amount of air freight was arriving in Manaus, during 1968, to supply the new Zona Franca.

Reliable statistical data concerning the origin and/or destination of air cargo and passengers arriving at

or departing from the Manaus airport are nonexistent. Published information shows only the yearly totals of passengers and cargo. However, each flight that arrives at or departs from the local airport is required to file a flight bill listing the flight origin, destination, the number of passengers, and the amount of cargo loaded or unloaded in Manaus. A sample of these flight bills was taken for 1966 and 1967 in order to better ascertain the main flow lines of passengers and cargo into and out of the Manaus airport. Traffic for 1967 was the primary concern, although 1966 was included in the sample for comparative purposes. A clustered sample was used, with a 100 per cent survey of three randomly selected months from each year.

The sample of 1967 flight bills revealed a high concentration, 96 per cent, of arriving cargo originating in six Brasilian cities. In their order of importance the cities were: (1) Belém, which accounted for 64 per cent of the total incoming cargo; (2) Rio de Janeiro; (3) Rio Branco; (4) Cuiabá; (5) São Paulo; and (6) Fortaleza. With one exception, Recife in place of Fortaleza, the same six cities, with some variations in rank, accounted for 87 per cent of the cargo arriving in Manaus in 1966. A similar concentration, 88 per cent, was observed in air cargo departing from Manaus in 1967. The ostensible destination of cargo, in rank order, was (1) Rio Branco, 25 per cent;

(2) Belém; (3) São Paulo; (4) Rio de Janeiro; (5) Boa Vista; and (6) Fortaleza.[25]

A concentration of origins for passengers arriving in the Manaus airport was also evident in the sample, although to a lesser degree than for air cargo. Six cities--Rio de Janeiro, Belém, Rio Branco, Boa Vista, São Paulo, and Fortaleza--accounted for 79 per cent of the arriving passengers. The same six cities, with only one variation in order, Rio Branco second instead of third, were the apparent destinations for 78 per cent of the passengers embarking at Manaus.[26]

An analysis of the flight bill sample also furnished some insights into Manaus' function as a center for commercial air transportation within Western Amazonia. The extent to which the inhabitants of Western Amazonia utilize and benefit from the air service reflects on the nature of air transportation and its value in this underdeveloped region. Only 10 per cent of the air cargo arriving in Manaus in 1967 originated in Western Amazonia. With the exception of wild animal skins, live tropical fish, and rosewood oil, few regional products have a sufficiently high value to justify being shipped by air.

Western Amazonia was the destination of 38 per cent of the air cargo shipped from Manaus in 1967. Medicinal products, destined for interior communities, constituted a considerable portion of this cargo. Other high value

products that are often air shipped include replacement machine parts, tobacco, liquor, perfumes, and cosmetics. Acre is an exceptional case in Amazonia; it has to depend on air transport for its imported food supply for a part of each year. When the local rivers are at their lowest level, Acre is virtually isolated from the rest of Western Amazonia. Lacking overland connections, the state has to rely on airplanes to supply it with fresh food during this time of year. Most of the food is flown from nearby Pôrto Velho, where it now arrives by truck. Irregular shipments of fresh fish and other food items are also flown in from Manaus. Even such low-value items as raw onions were observed arriving in Rio Branco by airplane in 1968. Needless to say, the cost of food in Rio Branco is exceedingly high, probably the highest in Brazil.

In contrast to its cargo traffic, air passenger service within Western Amazonia constitutes a substantial percentage of Manaus' total passenger service. Approximately 42 per cent of the passengers arriving at the Manaus airport in 1967 originated their flight in Western Amazonia. Departing passengers, destined for Western Amazonia, accounted for 46 per cent of the yearly total.[27] If the reduction in travel time is considered, and in view of the slowness of boat travel in Amazonia it must be, commercial airlines provide the fastest, most frequent, and least

expensive means of traveling from one location to another within Amazonia.

The continued growth of commercial air transportation in Amazonia has exercised a tremendous influence on the region during the last twenty-five years. Its attraction as an alternative to complete reliance on fluvial transportation is obvious. For the larger communities in the interior, regular air service provides a link between that community and the rest of Brazil, thereby reducing the previously existing feeling of complete isolation. With the excellent air service now linking Manaus to the other major urban centers in Brazil, politicians, public servants, and private businessmen can, and often do, journey to Brasilia, Rio de Janeiro, and São Paulo on business and return within a few days.

Despite its many advantages, air transportation has some obvious disadvantages. The high cost involved prohibits air cargo shipping for most regional products. In view of Amazonia's general underdeveloped condition, commercial air transport in the region will continue to concentrate on providing passenger service. By nature, air traffic is restricted to isolated locations. The vast empty regions between ports of call feel no influence from the airplanes flying high overhead. Although commercial air service is integrating Amazonia, it is not occupying it. Sustained regional development will require both.

Highway Transportation: An Occupying Force

For centuries the Amazonian selva has been an effective barrier to overland transportation in Brazil. With adequate space for population expansion already existing in southern Brazil, the need for opening roads into the northern selva never developed. Amazonia's continued physical isolation fostered a relationship with southern Brazil which differed little from that of an overseas colony and the mother country. Only in the last twenty-five years has a real change in attitude toward Amazonia been discernible. This new Brazilian interest in the northern region is founded more on political consideration than economic reality.

The Brazilian government is determined that the Amazon Basin, one of the few remaining habitable areas in a world beset by a rapidly increasing population, shall remain Brazilian. Fully aware that political boundaries are relatively meaningless in an unoccupied expanse, the country has mounted a campaign to integrate Amazonia into the national framework. Physical occupation, which will make the country's effective national territory coincide with its present political boundaries, is the long range goal. Improved transportation and the elimination of physical isolation are short-term solutions and necessary prerequisites for eventual colonization and economic development.

The opening of the Belém-Brasilia road in 1960 was —— the first dramatic accomplishment in the new campaign. When the official caravan drove from Belém to Brasilia that year, "the pioneer road was narrow, it had excessive curves and grades, and during the rains, it channeled the torrential waters."[28] In accordance with the prevailing weather, the 2,164 kilometers in BR-14, as the new road was designated, alternated between dry choking red dust and great stretches of deep impassible mud.[29] Despite the problems of transit, the road was the first real land connection to southern Brazil and it symbolized the new national interest in Amazonia.

Once the initial route was open, continuing maintenance and improvements were required to keep it open. Grades were reduced, curves were straightened, and permanent bridges were constructed. Finally in 1964, the Belém-Brasilia Highway was being maintained, at least in passible condition, on a year-round basis. Before the opening of BR-14, the minimum time required for merchandise to arrive in Belém from southern Brazil was one month; longer delays were common. By truck, even over this rough dirt road, goods regularly began arriving from São Paulo and Rio de Janeiro in one week to ten days. This new, faster connection to the south had a considerable impact on commercial life in Belém.

An alternative to long delays and cargo damage,

resulting from numerous shipping changes and frequent handling, became a reality with the faster, door-to-door service available via the new Belém-Brasilia road. Entrepreneurs of every type were quick to see the possibilities and to take advantage of them. In 1967, just three years after it opened to year-round traffic, 91,430 tons of cargo arrived in Pará over the new highway.[30] Those 91,000 tons accounted for 23 per cent of all freight imported into the state in 1967. The state of São Paulo was the most important source of overland freight arriving in Pará, accounting for 44 per cent. It was followed by Goiás, with 18 per cent, and the state of Guanabara, with 14 per cent.[31]

Overland exports from the state of Pará, totaled 49,942 tons in 1967, about half the volume of imports. The state of São Paulo was the single most important destination for goods leaving Pará. It received 37 per cent of all the overland exports. Goiás, the destination of 32 per cent of the freight, was a close second. The remainder was well dispersed throughout the rest of Brazil south of Amazonia.[32]

In interstate shipments alone, the new Belém-Brasilia Highway carried 134,372 tons of cargo in 1967. Although data on intrastate shipments were not available, the improved mobility which accompanied the new road has been an obvious boon to the three states involved. The highway crosses the eastern corner of Pará, the most

heavily populated area within the state; the western tip of Maranhão; and it runs almost the entire length of the state of Goiás. Equally impressive is the occupation taking place along the road. Formerly isolated settlements have sprung to life after being incorporated into the overland route and numerous new settlements have appeared since the road was first opened.

Two Brazilian geographers, Orlando Valverde and Catharina Vergolino Dias, coauthored A Rodovia Belém-Brasilia, which appeared in 1967.[33] Their excellent work provides a detailed description of the road's 2,164 kilometers: the physical environment, settlement patterns, and economic activity. It accurately portrays the initial development resulting from the opening of this first road between Amazonia and southern Brazil, and, as such, is a valuable addition to the existing literature.

The partially completed Brasilia-Acre Highway is having a similar effect on the territory of Rondonia. The 1,520 kilometer stretch between Cuiabá and Pôrto Velho was first opened in 1963. In its initial stage the road was only passible during the dry summer period--three months at best. Near the end of 1965, the Fifth Batallion of Construction Engineers, a military detachment, was given the responsibility of maintaining the Cuiabá to Pôrto Velho stretch while completing the road through Acre to the border of Peru. Eventually the road is to link up in Pucalpa, Peru,

to form one segment of the Pan American Highway.[34]

By the end of 1966, the Cuiabá to Pôrto Velho portion of the road was permanently opened to year-round traffic. The new road had an immediate effect on commerce in the territory of Rondonia, as its predecessor the Belém-Brasilia Highway had effected commerce in Pará. In 1965, while the road was only passible during the summer months, the territory of Rondonia exported 7,880 tons of regional products by cabotagem and 1,191 tons by truck over the new road.[35] Two years later, when the road south was open all year, the territory exported 3,646 tons by cabotagem versus 5,474 tons by road.[36]

The mode of transportation for imported goods has been similarly affected. The total cost of transport from southern Brazil to Pôrto Velho is reported to be slightly higher by truck than by ship. Most merchants believe the higher costs are offset by the added savings resulting from a reduction in damaged and spoiled merchandise--which was too often the condition in which much of the goods arrived by cabotagem. The saving in time is even more dramatic. The standard delivery period for merchandise departing from southern Brazil for Pôrto Velho, by cabotagem, is two to three months. During the dry season shipping is precarious on the tributary rivers and longer delays are very common. In contrast, an order can be given to a trucker leaving Pôrto Velho for São Paulo and delivery of goods is normally

made in two weeks. One of the most obvious advantages of the traffic by road has been the reduction of shortages in Pôrto Velho. Periodic shortages of merchandise was a serious problem when the city was dependent on cabotagem for all its merchandise and it is a problem which still haunts Manaus.

Most of the overland freight is carried by Brazilian made, diesel powered trucks, with a six to seven ton carrying capacity. The trucks haul in live cattle from Cuiabá, Mato Grosso, and manufactured goods and food products from São Paulo and Rio de Janeiro. On return trips they haul out regional products: bales of processed rubber destined for São Paulo and cassiterite for Volta Redonda and other smelters in southern Brazil.

Cassiterite was first discovered in Rondonia in 1956, and since then production has increased from less than 100 tons in 1958 to 2,400 tons in 1967.[37] Placer miners (garimpeiros) still account for about 85 per cent of the total cassiterite production in the territory. Interestingly enough, before the new road was improved in 1966, most of the cassiterite from Rondonia, the only major producer in Brazil, was being flown out by airplane at a cost ten times higher per kilogram than it costs to ship it by truck.[38]

The Fifth Batallion of Construction Engineers is now working on the road between Pôrto Velho and Rio Branco, Acre. The first stretch of this road parallels the old

Madeira-Mamorés Railroad which came into being as a result of the Treaty of Petropolis in 1903.[39] When the road from Pôrto Velho to Guajará-Mirim is completed, sometime in 1969, the old railroad will no longer be maintained. The railroad equipment is ancient and maintenance costs are prohibitive; wood-burning locomotives are still pulling the trains. The Bolivian government, one of the signers of the treaty, will only agree to the railroad being closed after a permanent road is constructed to replace it.

An old road exists between Rio Branco and Abuña, a small community on the Madeira-Mamorés Railroad. Eventually it will be improved to an all-weather road connecting Rio Branco to Pôrto Velho. For the present, the army engineers are making it passable during the summer months. The road was opened in 1967, from the first of August until November 15, and was traveled by a total of 405 vehicles transporting 1,370 tons of cargo between Abuña and Rio Branco.[40] Transportation in Acre remains very precarious and the new permanent road connecting that state to Pôrto Velho and southern Brazil is eagerly awaited.

The state of Amazonas has an official total of 576.6 kilometers of roadway, of which only ninety-two kilometers are paved. Almost half of the state's total mileage is in the two hundred and eighty-six kilometer road between Manaus and Itacoatiara.[41] Although it was first started in 1955, the road was not completed until 1965.

Both cities export regional products and there is little commercial traffic between them. Through traffic on the road is largely confined to a regular bus line which makes the round trip three times a week--one day in each direction. A considerable amount of agricultural activity has developed along the portion of the road closest to Manaus. The most productive area is centered around a Japanese colony at kilometer forty-eight. These farmers grow vegetables and keep laying chickens to supply the Manaus market and they raise black pepper for exporting.

With the exception of a seventy-eight kilometer road, connecting Humaitá and Lábrea, which is only passible in the dry season, and another thirty-nine kilometers heading in the direction of Pôrto Velho from Humaitá, the remainder of the roads in the state of Amazonas are short access roads around the perimeter of Manaus. Existing roads in the rest of Western Amazonia are as bad or worse than those in Amazonas.

The only all-weather road in Rondonia is the portion of the new Brasilia-Acre road passing through the territory. The rest are short feeder roads passible only in the dry season. Other than the old road to Abuña, Rondonia, the only other road of any importance connects Rio Branco with Boca do Acre, Amazonas, during the dry season. Conditions are similar in the territory of Roraima. A dry-season-only road parallels the Rio Branco from Boa Vista south to

Caracarí some one hundred and forty kilometers. Caracarí is the upper limit of navigation on the Rio Branco, except when it is in flood stage for three to four months out of the year, so the road is used to transport goods on to Boa Vista. There is also a road, hardly more than a trail, across the relatively open expanse (campos) to the Guyana border which again is only passable during the dry season.

The plan to integrate Amazonia into the Brazilian road network includes a road connecting both Pôrto Velho and Boa Vista to Manaus. This would permit overland transportation from the border of Venezuela to southern Brazil, via Manaus, Pôrto Velho, Cuiabá, and Brasilia. In 1968, contracts were signed for private companies to begin opening the Manaus-Pôrto Velho road.

The Manaus-Pôrto Velho road has first priority in the road building plans of the state of Amazonas. Actual construction work began on June 15, 1968, and a three year completion date for the eight hundred and forty-six kilometer road has been tentatively established. The director of the Amazonas state road department prepared a colonization plan for occupying the land that will become accessible with the new road. According to this plan, 3,500 families from northeastern and southern Brazil would be settled in seven agricultural colonies along the road. Each colony would consist of five hundred families with fifty hectares of land apiece. The colonists would raise African oil palm for a

cash crop and rice, corn, manioc and farm animals for subsistence. Under the planned program, the colonists would receive technical assistance and financial aid from the state. The dynamic director and his plan to colonize the new road gained considerable support at the state and federal level and was largely responsible for getting work started on the project at that time.[42]

An engineering firm in southern Brazil completed a viability study of the proposed Pôrto Velho-Manaus road shortly after the contracts were signed. The report concluded that the proposed road's benefit to national security and its integration of Amazonas into a national network were intangible factors that could not be quantified. From a purely economic basis though, the road was not economically viable now or in the foreseeable future.[43] The study also questioned the planned African oil palm project when no basic research had been carried out to determine whether or not the colony sites were suitable for such a crop. Recommendations were also made that a long-range projection of the demands for African palm oil be undertaken, since Colombia and Malasia have both recently gone into African oil palm production on a large scale.[44]

The high cost of constructing the road versus the limited population it would serve were the main factors responsible for the report's conclusion. As the study indicated, "about ninety-five per cent of the road will

traverse a region of dense tropical forest, uninhabited, with trees reaching thirty meters in height."[45] Due to the region's heavy rainfall, road leveling will be restricted to five months out of the year--at best. Total cost estimates for constructing the road, from deforestation to primary surfacing, including bridges and ferries, amounted to NCr$80,000 per kilometer with an annual maintenance cost of NCr$2,500 per kilometer.[46]

The road to Boa Vista, which has been talked about for years and started on several occasions, but never more than halfheartedly pursued, is now included in the country's road building plan and is being attacked from both ends. Preliminary reports call for the completion of the seven hundred and thirteen kilometer road between the two cities by the end of 1971. Regardless of the completion date, and long delays are not uncommon occurrences, the road will be a welcome addition when it is completed. It should enable a regular supply of beef to move from the cattle-producing area of Roraima to the market in Manaus, thereby benefiting both parties. At present beef cattle are shipped by boat, during the approximately three months when the river level permits the crossing of the rapids at Caracarí, one hundred and forty kilometers south of Boa Vista. During the rest of the year the city's supply of fresh meat comes from local herds and from the Lower Amazon Valley. The supply varies considerably throughout the year.

The construction of the Manaus-Pôrto Velho and Manaus-Boa Vista roads will undoubtedly dominate the resources and road-building program of the state of Amazonas for at least the next five years. The other main sections to the national road plan in Amazonia are the extension of the Brasilia-Acre road to the Peruvian border and the continuance of the Manaus-Boa Vista road to the Venezuelan border. The Brasilia-Acre road is projected to go from Rio Branco along the Acre-Amazonas border to Sena Madureira, Feijó, Cruzeiro do Sul and on to the Peruvian border. At the border it will connect with the Pan American highway coming through Pucallpa. No completion date is being projected for this portion of the Brasilia-Acre highway at present.

Work is already underway on the road from Boa Vista to the Venezuelan border two hundred and ten kilometers to the north. Approximately thirty kilometers were completed in July of 1968. Building roads through the open campos north of Boa Vista is much easier than through the selva between Manaus and Boa Vista. Consequently, the stretch between Boa Vista and Venezuela is scheduled for an early completion date.

When the overland route from Venezuela to southern Brazil becomes a reality, it will enhance Manaus' position as the primary transportation center in Western Amazonia. For over three hundred years Amazonia depended upon its

natural system of rivers for transportation. In the last twenty-five years air transportation greatly facilitated point-to-point travel within the region and between Amazonia and the rest of Brazil, but it had little effect on the occupation of the interior. The next five years should see the completion of the road through Amazonas to southern Brazil, for national security and integration reasons, even if it is not economically viable to build such a road. It is already being heralded as a major step toward real regional development. The Belém-Brasilia Highway is frequently cited as an example of how overland transportation stimulates commercial activity in the city and occupation of the interior. While the immediate effect of a land route may not be as dramatic in Manaus as it was in Belém, the long-range influence can only be beneficial.

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46. Ibid., p. 165; These costs were estimated when the exchange rate was NCr$3.2 per U.S. $1.00.

MANAUS AS A SERVICE CENTER

An analysis of the services available in a given city provides a significant indication of the city's regional importance. In general, the greater the number of services available in an urban center, the more extensive is its regional influence. In Manaus' case, an examination of how effectively the city provides six of these services--administrative, financial, educational, medical, religious, and communications--should sufficiently demonstrate the relationship that exists between the city, the state of Amazonas, and, to a lesser degree, Western Amazonia.

The Administrative Function

Manaus functions as an administrative center on at least three levels--federal, state, and private. The city's importance as the only major urban center of any note makes it the logical focal point for federal agencies operating within Western Amazonia. As the state capital, it houses virtually all of the state's governmental offices. The city is also emerging as a rudimentary administrative center for private enterprise which is expanding in the area and basing its operation in Manaus.

Western Amazonia shares a common border with six other South American countries and in the absence of

settlers to occupy this great expanse, the military has the task of making its presence felt in strategic locations along this border. Manaus is the headquarters for a frontier unit (Grupamentos de Elementos de Fronteira) which is charged with this task. Command headquarters and training facilities for the force are located in Manaus and smaller contingents are stationed throughout the area. Outside of Manaus the largest groups are in the other capital cities: Boa Vista, Rio Branco, and Pôrto Velho. There are also smaller detachments in Guajará-Mirim, Cruzeiro do Sul and eight other very small communities in various locations along the border. According to their commander, the responsibility of the military in Western Amazonia is "to give moral and military aid to the frontier cities in which they have installations."[1] The military constitutes the largest federal establishment based in Manaus.

The Superintendência do Desenvolvimento da Amazonia (SUDAM), a federal agency concerned with the economic development of Amazonia, has its main administrative headquarters in Belém, with a regional office for Western Amazonia based in Manaus. SUDAM's role since it replaced the old SPVEA in 1966 is primarily that of a coordinating agency: encouraging and stimulating development while making sure that similar work is not being duplicated by two or more agencies or private groups. Most of SUDAM's

projects have been concentrated in the state of Pará where a better developed infrastructure and a greater population concentration have appeared more conducive to success. Of the approximately one hundred and thirty projects in which SUDAM was involved in 1968, only eleven were in Western Amazonia and almost all of these were in Manaus.[2]

Manaus is the regional headquarters for the Instituto Nacional de Providência Social (INPS) in Western Amazonia. A federal program similar to the social security administration in the United States, INPS is financed by an 8 per cent contribution by both the worker and employer. Their services include medical care, hospitalization, dental extractions, pensions for invalids and retirees, and funeral expenses. These benefits are for all workers under the plan, and their dependents, until they are eighteen years old. The program is supposed to include all workers, with the exception of state employees, who have their own system. In practice, the program covers a very small percentage of the workers in Western Amazonia.

In 1966, the beneficiaries of INPS services in the entire region totaled only 92,600: 31,000 workers and 61,600 dependents. The regional office employs nine hundred people, including twenty-six in Pôrto Velho and twenty-three in Rio Branco. The organization is currently constructing a new fifteen-story administrative center in Manaus. The INPS's benefits are available in Manaus, but other than

the restricted service in Pôrto Velho, Rio Branco, and Itacoatiara, INPS has no service or influence in the interior of Western Amazonia. Seven municípios in the region have either correspondents or banks where program contributions are deposited, but they offer no professional services. Contributors to the program who live in the interior cities must travel to Manaus to take advantage of the benefits.[3]

The National Department of Roads and Highways, DNER (Departamento Nacional de Estradas e Rodoviaria), established a number of administrative districts in Brazil as part of the country's road building program. Manaus is the seat of district one, which includes Rondonia, Acre, Roraima, and Amazonas. With the sparsity of existing roads in Western Amazonia, the district office in Manaus is primarily concerned with the work now underway to open a road from Pôrto Velho to the Venezuela border--via Manaus and Boa Vista. Although DNER lets out contracts to the state road department for construction within the state, it is retaining responsibility for constructing the road from Boa Vista to the Venezuela border. The district office in Manaus directs and coordinates road work taking place in the region.[4]

One of the few federal agencies based in Manaus that is doing any work outside of the city is the National Institute of Agrarian Development (Instituto Nacional do

Desenvolvimento Agrario). Manaus is the headquarters for INDA's work in the state of Amazonas. In the vicinity of the capital the institute is providing supervision and technical assistance to the agricultural colonies of Bela Vista and Cacau Pireira, which are located directly across the Rio Negro from the city. The organization also has a considerable amount of equipment, including track tractors, bulldozers, wheel tractors and discs, which it provides, maintains, and operates. Colonists who want to use this equipment to clear or work land are only required to pay the operating costs of the equipment. In addition to working with the nearby colonies, the institute has a number of agricultural technicians working near Parintins and Itacoatiara. It is one of the few agencies, either federal or state, which has had any success in getting technicians to leave the capital and work in the small communities in the interior of the state.

Two recently created federal agencies, both with regional offices in Manaus, are SUNAB and IBRA. The National Superintendency of Supply, SUNAB (Superintendência Nacional de Abastecimento), established its regional office for all of northern Brazil in Manaus, with a local delegate in each of the states and territories. Created in 1962 and modified a number of times since, the agency is responsible for setting the price on foodstuff, all drugs, and other necessities. So far the agency has not been very successful

in its efforts to control the price of fresh meat and other food products in Manaus and it is making no attempt, at this time, to extend its influence to the interior cities.[5]

The other new agency is the Brazilian Institute of Agrarian Reform, IBRA (Instituto Brasileiro de Reforma Agraria), which began in 1966. Manaus is the state headquarters of the organization which is responsible for bringing about reform in land holding. Their goal is the elimination of minifundias and latifundias by levying a steep progressive tax on unused land. Land that is being utilized is taxed at a very nominal rate, while idle land is taxed so high that it must be either put to use or sold in order to pay the tax. The program returns 80 per cent of the tax to the local município treasury; in effect, the federal government is collecting a tax which the local administrator often could not or would not collect for political reasons. The program's difficulty in Amazonas is in getting local agencies established and manned in the interior municípios. Local agents carry out a cadastral survey of land holdings in each município, the basis for the program, and then serve as administrators. For the time being, IBRA is concentrating on the municípios which are accessible from the capital.[6]

A combination federal-state program, with an administrative center in Manaus, is the Association of Credit and Rural Assistance of Amazonas, ACAR-Am (Associação

de Credito e Assistencia Rural do Amazonas), which is jointly financed by both levels of government. The federal government provides 60 per cent of the budget and the state furnishes the remainder. The program is modeled after the Agricultural Extension Service of the United States. Their technicians work with farmers in seed selection and better agricultural methods; they establish 4-S clubs with youths (comparable to our 4-H); and they try to introduce new concepts of hygiene, cooking, and sewing through the housewives into the homes. The organization began working in Amazonas in 1967. In addition to their headquarters in Manaus, they also have offices in the municípios of Careiro, Manacapuru (both bordering on Manaus), Itacoatiara, and Parintins.[7]

The city's function as the administrative center for the state of Amazonas is the natural corollary to its being the largest and most important urban center in the state as well as the capital. Each state office has its administrative center in Manaus, as is commonly the practice everywhere. Instead of being an administrative center with a network of smaller local offices, however, many of the state offices located in Manaus appear to be an end in themselves. They constitute virtually the entire administrative structure in their particular field; outside of Manaus and its immediate environs they provide little, if any, service. Consequently, administrative decisions and benefits are

also concentrated in the city while the interior is largely ignored.

With administrative personnel and funds concentrated in the capital, the limited resources which each agency has to work with are, more often than not, committed to the unproductive goal of improving or building modern facilities for the administrators based in Manaus. At the same time representatives and facilities of any type are lacking in the vast majority of interior communities.

The State Road Department of Amazonas, DER-Am (Departamento de Estradas e Rodagem do Amazonas), has its headquarters in a modern, four-story building called the Palacio Rodoviario. All of the state's road building activities are concentrated around Manaus. The interior is without roads. The Secretary of Education and Culture is housed in a modern, three-story building near the center of the city. The building was completely renovated in 1968 in honor of the President of Brazil's visit to the city. Educational facilities in the city are substandard and in the interior they are mainly non-existent.

The Secretary of Agriculture is another case in point. In 1968, their offices were moved into a new, ultra-modern facility on the city's fringe. Although the agency is responsible for improving agricultural production in the state, it has very few personnel working in the interior. In 1967, the staff included five agronomists and sixteen

agricultural technicians; only one of the former and two of the latter were working in the interior.[8]

At the federal and state level, the administrative function is almost exclusively confined to Manaus. In the private sector, a more typical administrative network functions, with local agencies in the interior responsible to a central office based in Manaus. Such a system is readily observable in the large commercial enterprises, which are now developing in Amazonia, and in the hierarchy of the Catholic Church, a private organization, which is well established in the region.

The best example of a commercial concern based in Manaus with an organizational network spread throughout Amazonia is the I. B. Sabbá Company. A local industrialist who started out in business as an exporter of regional products, I. B. Sabbá gradually diversified his operation and emerged as the single most powerful industrialist in Amazonia. His imaginative establishment of a small oil refinery in Manaus, in the early 1950's, was a farsighted investment which has been an asset to him and to Amazonia. The distributive branch for the company maintains storage facilities in Pôrto Velho, Rio Branco, Itacoatiara, Santarém, Belém, Macapá, São Luis, Maranhão, and Fortaleza, Ceará. In contrast to other administrative networks based in Manaus, the local agencies for the I. B. Sabbá Company

are located in all the major centers in Amazonia and they are in daily contact by private radio with the company headquarters in Manaus.

In the non-commercial field, Manaus is the administrative center for the Catholic Church in Western Amazonia. The city is the seat of an Arch-diocese which has authority over Amazonas, Rondonia, Acre, and Roraima. The diocese is divided into fifteen prelacies, each assigned to a particular religious order, which are responsible for carrying out the Church's work in their particular prelacy. The priests in Amazonia are, almost without exception, foreigners, as are most of the nuns. The National Council of Brazilian Bishops (Council Nacional de Bishops Brasileiros), which also has a regional office in Manaus, works with the archbishop in coordinating the church work in the fifteen different prelacies.[9] The Catholic Church in Western Amazonia does not have, nor does it need, an administrative organization comparable to that maintained by some commercial concerns, but it is one example of an effective administrative system.

A Financial Center

The city's position as a financial center has improved markedly during the last thirteen years. In 1955, six banks had agencies in Manaus;[10] by August, 1968, the number had increased to twenty. The creation of the State

Bank of Amazonas (Banco do Estado do Amazonas) in 1958, and its subsequent establishment of branches in the larger communities in the interior, signaled an upswing in banking activity in Amazonas. The establishment of the Zona Franca in Manaus, in 1967, resulted in an immediate flurry of new bank activity, with banks from southern Brazil vying with one another to open branches in Manaus.

The most active banks in Amazonia are the Bank of Amazonia (Banco da Amazonia) and the Bank of Brazil (Banco do Brasil). The Banco do Estado do Amazonas has the second most extensive network in Amazonas, after the Banco da Amazonia. The Banco da Amazonia is an organ of the federal government of Brazil. In 1943, it was given a monopoly over the buying and selling of all rubber in Brazil. It was converted into a regular bank in 1966, with the general objective of encouraging development in Amazonia. The former rubber monopoly was terminated and rubber is now bought and sold on the open market; but the bank's previous role in the rubber business did leave it with a number of agencies in the region. The administrative center for the Banco da Amazonia is located in Belém and all agencies in Amazonia are directly responsible to the Belém office; none are sub-agencies within a given state or territory. The bank has fourteen agencies in Pará, seven in Amazonas, seven in Acre, two in Rondonia, one in Roraima, and one in Amapá.[11]

The Banco do Brasil is also an official institution

of the federal government which functions as a general bank with branches throughout the country. The bank's main office is in Rio de Janeiro, and, like the Banco da Amazonia, all agency banks are directly accountable to the main office. The Banco do Brasil's branch in Manaus dates back to 1908, when it was the second branch to be established in Brazil. The bank now maintains eight branches in Pará, four in Amazonas, two in Acre, two in Rondonia, one in Roraima, and one in Amapá.[12]

The Banco do Estado do Amazonas is a private bank created with the avowed purpose of encouraging economic development in the state of Amazonas. The bank is working to establish agencies in the interior, as conditions warrant such expansion. In 1968, the Banco do Estado do Amazonas had eight agencies: two agencies and the main bank were located in Manaus, and the cities of Itacoatiara, Parintins, Boca do Acre, Maués, and Manacapuru each had one agency.[13]

The sector of the Amazonas economy responsible for the largest percentage, by value, of bank loans outstanding in 1967 was agriculture--with 35 per cent. Industry was a close second with 33 per cent. Commerce was third with 23 per cent, followed by cattle raising, 7 per cent, government, 1 per cent, and private loans, with less than 1 per cent.[14] The creation of the Zona Franca in Manaus is putting new emphasis on industry and commerce, and there are some indications that this may result in a greater

concentration of funds in those sectors. The Banco do Estado do Amazonas was already concentrating in these areas in 1967, when commerce accounted for 46 per cent of the funds applied by the bank, and industry was responsible for another 44 per cent. The remaining 10 per cent went for rural investments, 7 per cent, and to private individuals, 3 per cent.[15]

Twenty communities in Western Amazonia are being serviced by at least one bank. Like other services, banks tend to concentrate in the larger communities, especially the capital cities. Thirty of the area's seventy-five banks are located in the four capital cities. In 1967, eighteen of the thirty-two banks in Amazonas were located in Manaus. In the state's other nine communities with banking service, two cities had three banks apiece, one city had two, and six others each had one. To maintain a proper perspective on the availability of banking facilities in the interior of Amazonas, it should be emphasized that thirty of the state's forty-three interior municípios have absolutely no local banking services.[16]

In Acre four of the state's thirteen banks were located in Rio Branco, the capital. In the other six communities with banks, three had two banks apiece, and three had one each. Banking in Rondonia is available in only two communities: Pôrto Velho, which has six banks, and Guajará-Mirim with the remaining two banks in the

territory. Both banks in Roraima are in Boa Vista.[17]

The concentration of banking activity in Manaus is reflected in the record of banking activities in Western Amazonia in 1967. See Table 1. As the table shows, the banking establishment in Manaus was responsible for more financial activity than the rest of Amazonas and Western Amazonia combined. Since then, the city's importance as a financial center has been even further enhanced by the creation of the Zona Franca.

Educational Services

Educational facilities from pre-school nursery through university level education are available in Manaus, and to that extent the city functions as an educational center in the state. Existing schools in the city are overcrowded and unable to adequately accommodate the local urban population. In the interior communities elementary schools are grossly inadequate both in number and in the quality of education, while secondary schools, with the exception of six or seven of the larger communities, are virtually non-existent.

The larger communities in the interior, such as Itacoatiara, Parintins, Coari, and Tefé, are experiencing their own urban explosions as families from smaller riverine communities and isolated settlements migrate to the centers in search of a better life. The availability

TABLE 1

A RECORD OF BANKING ACTIVITY IN WESTERN AMAZONIA, AS OF DECEMBER 31, 1967

Political Unit	Cash Reserves in Current Money NCr$	Loans in Current Accounts NCr$	Discounted Bonds NCr$	Deposits on Demand and Short Term NCr$	Term Deposits NCr$
Amazonas	1,958,569	37,899,900	48,448,373	58,586,963	4,722,464
(Manaus)	(1,291,784)	(31,259,721)	(39,654,977)	(56,667,496)	(4,645,913)
Acre	881,973	11,066,136	4,267,437	8,871,903	263,887
Rondonia	652,794	5,700,665	7,586,548	8,241,141	252,930
Roraima	774,160	879,135	676,828	1,049,063	58,143

Source: Movimento Bancário do Brasil 1967 (Rio de Janeiro: Serviço de Estatística Econômica e Financeira, 1968), pp. 7-8.

of even limited educational, medical, and religious services, as well as the other amenities of community living, exerts a strong attraction on people living an isolated existence in the interior. Often after a family moves to one of these centers, the male members will continue working in the interior during most of the year while the women and children live in the urban center.

No reliable statistics are available on the number and/or location of educational facilities in the interior municípios, but the lack of schools and teachers is one of the most common complaints heard in these communities. If it were not for the educational activities of missionary groups in Amazonas, conditions would be much worse. In many communities religious orders build, staff, and maintain the local schools with little, if any, financial aid from the state government. These private efforts are probably responsible for the education of 20 to 50 per cent of the students in the interior.

One of the most serious problems of education in Amazonas is getting teachers to staff the schools in the interior communities. Salaries are extremely low and living conditions are very difficult. Persuading a newly-qualified teacher to leave Manaus to go live and teach in some other community in the state is not an easy task. In Coari, the fourth largest community in Amazonas, the schools are trying to overcome this obstacle by establishing their

own teachers' training program. Students completing the secondary program are qualified as elementary school teachers. The program is even more remarkable because there are no state-maintained secondary schools in Coari. In frustration and desperation, the local Catholic mission, a Redemptorist order from the United States, finally started their own secondary school. The local Protestant missionaries followed suit and opened a second, but smaller, secondary school. Out of the project to establish a secondary school came the idea to train their own elementary teachers from local students.

The government in Manaus is well aware of the inadequacies of the educational system in the state, but they see little hope for rapid improvement in the situation. According to government figures, for every 10,000 inhabitants in the state, only twelve concluded the first cycle of education (roughly equivalent to the junior high school level in the United States) in 1964.[18] The situation improved slightly by 1966 when an increase to twenty-two students for each 10,000 inhabitants was reported; still, only ten of these continued on through the second cycle (equivalent to the high school level in the United States).[19]

Parents in the interior who are determined that their children will get an education, and who can afford to do so, often send their children to live with relatives or friends in Manaus so the children can attend secondary

school in the city. Their chances of qualifying for admission to the university are usually much better if they attend secondary school in Manaus. For most families in the interior, such a program is an impossibility and the low level of education and the high degree of illiteracy continue to be perpetuated by the lack of educational facilities.

The stature of Manaus as an educational center in Western Amazonia was greatly enhanced when the University of Amazonas was created by federal law in 1962. Prior to that time the city had a small school of law and a school of economic sciences which offered evening courses. Both were incorporated into the new university.

The University of Amazonas now includes six faculties and a school of social services. The faculty of law is the oldest in the school and still the most prestigious, since law is the traditional profession for any educated man in Brazil. The faculty of economic sciences, which is twelve years old, still offers only night classes. The students are predominantly male and many of them are military officers stationed in Manaus. The students in the faculty of philosophy are predominantly female. Forty per cent of the students in that school are studying to be teachers which is almost exclusively a woman's profession in Amazonas. The low salaries make it extremely difficult for a man to support a family as a teacher; few enter the field.

The faculty of engineering began its third year in 1968 and it still has a very small enrollment. The faculties of medicine and pharmacy are also in their third year. Fifty per cent of the students in the school of medicine are from other states. The shortage of openings in medical schools in Brazil prompted a number of students from southern Brazil to come to Manaus to study medicine when the new faculty began in 1965. The medical students from other states account for 67 per cent of the out-of-state population in the University student body.

The school of social service is almost exclusively a female institution. It functioned as a private school in Manaus for twenty-five years. In 1968, it was annexed, somewhat reluctantly, into the university system. The total enrollment in the University of Amazonas in 1968 was 1,806, with males heavily outnumbering the females. See Table 2.

The university's influence, as measured by the origin of its students, is heavily concentrated in the city of Manaus. The state of Amazonas, the city and the interior, accounts for 75 per cent of the student body. Although the percentage of students from the rest of Western Amazonia is meager, less than 3 per cent, in absolute terms the sixty-four students are significant when the total population of the combined political units is considered. See Table 3. As the university becomes more firmly established and continues to expand, its influence and attraction will

TABLE 2

UNIVERSITY OF AMAZONAS--ENROLLMENT BY FACULTY--1968

Faculty	Male	Female	Total
Philosophy	129	298	427
Economic Sciences	334	92	426
Medicine	281	91	372
Law	244	80	324
Social Service	1	93	94
Pharmacy and Odontology	52	32	84
Engineering	77	2	79
Total	1,118	688	1,806

Source: University of Amazonas (unpublished data provided by that institution, June, 1968).

TABLE 3

UNIVERSITY OF AMAZONAS--STUDENT ORIGIN--1968

Origin	Male	Female	Total	Per cent
Amazonas (Manaus)	607	458	1,065	58.9
Amazonas (Interior)	168	117	285	16.2
Pará	58	26	84	4.6
Acre	22	15	37	2.0
Roraima	3	7	10	.5
Rondonia	5	2	7	.3
Other Brazilian States	243	52	295	16.3
Foreign Countries	12	11	23	1.2
Total	1,118	688	1,806	100.0

Source: University of Amazonas (unpublished data provided by that institution, June, 1968).

undoubtedly show a corresponding increase in Amazonia.

In addition to the regular school system and the university, the city also has a private bi-national center, the Instituto Cultural do Brasil e os Estados Unidos. The center functions as a gathering place for visitors from the United States and for local residents interested in learning about the United States. The institute also offers a series of English language courses for the members of the community who are interested and sufficiently affluent to pay the necessary tuition. It is very popular among university students, especially those majoring in English, and among members of the business community who find even an elementary knowledge of English to be a valuable asset.

Medical Services

Medical facilities and services in Amazonas are highly concentrated in Manaus. Outside of the capital, only three other communities in the state are important enough to mention as subcenters: Benjamin Constant, Itacoatiara, and Parintins. If it were not for the efforts of the federal health service, SESP (Serviço Especial de Saúde Publica), which maintains facilities in these three cities, medical assistance would be virtually non-existent in the state's interior.

An enumeration of the size and distribution of the state medical profession and the facilities it has to work

with illustrates the nature of the situation. In 1967, the state listed 126 practicing medical doctors which, if evenly distributed, would mean one doctor for each 7,127 residents--a herculean work load.[20] The records show, however, that 113 of these doctors practice in Manaus, which leaves only thirteen doctors to administer to the needs of the remainder of the state. The resulting ratio of 2,004 inhabitants per doctor in Manaus and 51,661 per doctor in the interior[21] is even more disparaging when the dispersed nature of the interior population is taken into account.

A similar concentration of hospital facilities, already seriously inadequate, and the resulting inability of the state to provide even minimal services for the majority of its residents, complements the shortage of medical doctors. The hospital situation in Manaus, as previously described, is supplemented by the three small hospitals in the interior. Benjamin Constant, one of the last Brazilian communities on the upper Rio Solimões, has a twenty-five bed hospital staffed by two SESP doctors. Similar sized hospitals are located in Parintins and Itacoatiara. Each of these latter communities has three doctors, one private and two employed by SESP. The interior hospitals function primarily as maternity hospitals and secondarily for the treatment of illness through internal medicine. Any seriously ill patient, one requiring surgery, or even the use of diagnostic X-rays, must be sent to Manaus which is

the only place in the state where treatment is available.[22]

The state is currently building a hospital in Tefé, but, in many ways, that is only a partial solution to the problem. According to the Assistant Secretary of Health, financial assistance for the building and outfitting of such hospitals is not overly difficult to arrange; the real problem is in getting and keeping the interior hospitals staffed.[23] The hospital at Itaccatiara is an excellent example. Originally constructed and equipped in 1960, the hospital sat unused, for lack of staff, for the next four years. In 1963, a Catholic order, the Scarboro Mission from Canada, established a mission in Itacoatiara and the priests soon began to question the benefit of a non-functioning hospital. The next year a small group of nuns from the same order arrived in Itacoatiara and began working to open the hospital. It was finally opened the following year for maternity cases and other non-surgical patients. Assisted on a fairly regular basis by a Brazilian doctor of internal medicine, the sisters worked as general supervisors and nurses for the hospital. Their dedication and determination was the only thing which kept the hospital operating; delivering babies and treating illnesses and accident victims became common duties for the sisters.

Their continuing efforts to improve the hospital, by training their own local assistants and bringing in medical supplies and new equipment, appear to have been a

mixed blessing. In 1968, the state health department announced a new program to provide more medical service to the interior. Essentially, the plan is to improve medical facilities in key communities which can then provide better service for the surrounding area. The first implementation of the program involved taking over the hospital in Itacoatiara. If the program works as planned, it will be an asset to the community and state. If it is permitted to degenerate after a few years, taking the local hospital with it, the program will be a serious detriment.

Outside of Manaus, medical assistance tends to be concentrated in the Lower Amazonas region east of the capital. A considerable portion of the state's population is located in that area. The two largest communities, Itacoatiara and Parintins, account for half of the doctors and two-thirds of the hospital beds in the interior. The inhabitants of the other areas of the state are isolated and, for the most part, without any medical service. Neither the state nor the federal government has any system of regular visits to the interior by teams of medical personnel.

Poor living and working conditions make it exceedingly difficult to persuade qualified doctors to leave the relative comfort of the city for life in the interior. Living and working in Manaus is incomparably better and the demand is sufficiently high that most doctors look on

work in the interior as constituting a high personal and financial sacrifice. Considering the shortage of doctors, the resulting high case loads, and the reduced incomes in the interior, it is easy to understand the rationale behind such decisions.

Doctors employed by SESP usually sign a two-year contract to go wherever the organization sends them. In the interior of Amazonas, the turnover rate for doctors remains at a high level. Two communities, Coari and Tefé, had SESP doctors in 1968. They each indicated that they would be leaving when they completed their contract assignment. After four years in Coari, the local doctor intended to return to school in southern Brazil to do advanced work in a specialized field.[24] In Tefé, the doctor had already requested a transfer to a community closer to Manaus, either Manacapuru or Itacoatiara. His wife was expecting their first child and he expressed a preference for living closer to Manaus because of the medical facilities and pharmaceutical products available there.[25] Ironical as that may seem, coming from a doctor, it accurately characterizes the problem of medical services in Amazonas.

In many ways Manaus acts as a magnet, drawing people in need of medical assistance from the interior into the city. Diseased, deformed, and maimed individuals, usually reduced to begging in the street, are a common sight in the city. In addition to the regular hospitals, the only leper

colony in the state is also located in Manaus. Leprosy is widespread in Amazonas and most of the diseased receive little or no medical attention. In 1968, the Secretary of Health, who maintains an active file on every known leper in the state, reported 5,359 known cases, with 2,284 of them residing in the município of Manaus.[26]

In terms of the number of people afflicted, malaria continues to be the most extensive and serious disease in the state. Within the city, the problem of malaria is minimal. Houses in a buffer zone around the city are sprayed regularly, but spraying is not considered necessary in the center of the city. The malaria that exists in and around Manaus is primarily the result of infected people bringing it from the interior to the capital.

The Campaign for the Control and Eradication of Malaria (Campanha de Controle e Erradicação da Malaria) for the state of Amazonas is based in Manaus. It is a federal agency almost completely financed by the World Health Organization. The local agency began operating in Amazonas five years ago and, until 1968, concentrated its efforts in the area north of the Rio Amazonas, the area between Parintins and Itacoatiara, and in the frontier area around Benjamin Constant. The relative concentration of inhabitants in these areas and the financial limitations of the program determined this approach in order to derive maximum coverage from the program.

The organization operated thirty-two boats in this campaign, carrying spraying crews up the rivers and tributaries in the area. The crews stop at every house and systematically spray the interior with a solution of DDT to eradicate the malaria-carrying mosquito. The crew keeps a record of each house, showing when it was last treated, the number of occupants, and the results of blood tests, if taken. The treatment of houses is compulsory, by law, and is repeated every six months. Blood tests are voluntary.[27]

In June, 1968, the local organization took delivery of seventy-six new launches and twenty-four canoes. Crews then began the first treatment of the areas of the Rios Madeira, Purus, Juruá, Solimões, Tefé, and the major part of the Solimões-Javari. By the end of 1968, they expected to cover the entire state for the first time and thereafter to continue spraying houses regularly on a twice yearly basis.[28]

The federal social security program (INPS), previously described, provides a variety of medical services to people under the program, but these services are only available in Manaus. The Catholic church also has a number of medical stations in the upper Rio Negro region and in other parts of the state, but none of these have a resident doctor. In general it can be said that any medical problem in Amazonas that is serious enough to require a doctor's attention will also require a trip to Manaus. The poor, the infirm, and

especially the emergency cases in the interior are often left no alternative but to survive on their own or not at all.

A Center for Religious Activity

The role of the city as a religious center dates back to its founding in 1669. Missionary work among the local Indians was the order of the day in the seventeenth century and it continues to dominate the work of some contemporary religious groups. The remaining Indian communities in Amazonas no longer live in the vicinity of Manaus; today the city functions as a supply and administrative center for small religious groups working in the interior. Religious institutions and activities in Manaus can be broadly grouped into three main categories: Catholic, Protestant, and Jewish.

The Catholic Church is the largest, best organized, and most influential religious organization in Western Amazonia, which is not surprising in a nominally Catholic country. The archbishop in Manaus is the religious superior of approximately 175 priests and 275 nuns and sisters, almost all foreigners, who carry out the church's work in Western Amazonia.[29]

These priests and nuns represent orders from Italy, Germany, Spain, Holland, Canada, the United States, and even Brazil. Some of the oldest prelacies in the area were

established in 1910, while some of the newest are as recent as 1963. In addition to their prelacy, several of the orders have churches in Manaus. Usually located in one of the bairros surrounding the city, they function as administrative and coordinating headquarters for that particular order. Some of these neighborhood churches also operated orphanages and schools.

A few Catholic orders, such as the Salisian prelacy along the upper Rio Negro, are still working with Indian groups, just as they did when they first entered the area over fifty years ago. Most of the prelacies, however, are concerned with the Brazilian peasant (caboclo) in the interior. The underlying religious philosophy motivating their work varies considerably from prelacy to prelacy. While some groups rely on the traditionally conservative approach, others have been quick to apply church reforms which came out of the Vatican II Council, and some individual priests are easily a part of the progressive ideological groups in the church which favors greater reform in order to make the Catholic religion more meaningful to the common man. In conjunction with their religious activities, priests are encouraging community development projects, starting cooperatives, and introducing the use of new crops and agricultural techniques. The nuns are just as active in education, medical services, and community development projects. Above and beyond their religious duties, many

priests and nuns are acting as catalysts to bring about long overdue changes in the daily life of the Amazonians.

Protestant missionary groups in Western Amazonia fall into two categories: those doing religious linguistic work with the Indians in the interior, and those who are proselytizing among the caboclos of the interior and the residents of Manaus. The New Tribes Mission is the largest Protestant group in Western Amazonia. Exclusively devoted to linguistic work, the group maintains an administrative headquarters in an isolated locale about twenty miles down-river from Manaus. Their headquarters is a completely self-contained English-speaking colony. It includes a boarding school from the first through the twelfth grade for children of missionaries working in the interior, a printing shop, and a repair shop for boat motors. In 1968, the colony was staffed by ten permanent families and seventy-five school children. An additional thirty or forty adults were in the interior.

The members of the New Tribes Mission are scattered among numerous small Indian tribes in the interior. These missionaries live with a tribe while learning the native language. After the language is mastered orally, it is written phonetically. The missionaries then translate and print parts of the Bible in the phonetic language. Finally, they teach the Indians to read their own phonetic language so the written account of the Bible can be used to convert

the Indians to Christianity. The entire process may take as long as ten years before the first convert in a tribe is assured.[30]

The Wycliff Translators are a smaller group doing similar linguistic missionary work. The Wycliff group is most active among the Indian tribes in Rondonia. The other Protestant groups and individuals follow a more conventional approach and are centered in Manaus and the interior communities. They include such diverse groups as: the Acre Gospel Mission (Irish); the West Amazon Mission (British); the Evangelical Union of South America; a number of Independents; and no less than four different Baptist groups--Southern Baptist, Christian Baptist, Kentucky Faith Baptist, and Regular Baptist. Like the Catholic priests, most Protestant missionaries in Western Amazonia are foreigners. Their numbers vary considerably from month to month, but there are normally between 200 and 250 Protestant missionaries working in the region.[31]

The largest Jewish community in Amazonas is located in Manaus. At the time of the 1960 Census, there were 550 Jews in the state, with 329 of them residing in Manaus.[32] In 1968, the city had two synagogues and the local Jewish community included some of the most prominent and influential families in the state. Other religious beliefs found in Manaus and the rest of the state include Muhammadism, Buddhism, and Spiritualism,[33] but they are few in number,

unorganized, and have little if any effect on the other inhabitants of Amazonas.

The Communication Network

Communications, like so many other aspects of life, are seriously deficient in Amazonas. Through the daily newspapers, radios, and their regular mail service, the inhabitants of Manaus are in constant contact with the rest of Brazil and to a lesser degree the world. The breakdown occurs between Manaus, the interior of the state, and the rest of Western Amazonia. Communications systems in the region are either antiquated, inadequate, or non-existent. The difficulty of transportation contributes to the problem.

Manaus is the administrative center for the Postal Department of Amazonas and Acre. The department maintains postal agencies in thirty-four of the state's forty-three interior municípios. Mail goes from Manaus to the interior by air, on the regularly scheduled Cruzeiro do Sul flights. Most of the larger communities in the interior receive and dispatch mail on a weekly basis.[34] The postal agency in Manaus is not known for its rapid expediting of mail, however, and a considerable amount of the letters and packages sent to the interior are hand carried. Rare is the passenger leaving Manaus for the interior, any community in the interior, who is not asked to deliver letters and/or packages. It is a standard practice in the area.

Telegraph service is provided by the postal department; but, in Amazonas it is much worse than the mail service. At one time telegraph service was available from Manaus to Boa Vista and Belém. It is no longer operational. The postal department now has a radio-telegraph system, but it apparently is only partially successful. The only reliable connections between Manaus and the other capital cities in Western Amazonia are through International Telephone and Telegraph (ITT). They maintain radio-telephone service between the capital cities. Manaus has no telegraph connections with Belém or southern Brazil. Telegrams from southern Brazil are sent by mail. The installation of a modern system of telecommunications linking Manaus to Belém and southern Brazil is now in the planning stage. The project will be financed by SUDAM, but it is not expected to be operational until the early 1970's.

The new telephone company in Manaus (CAMTEL) is installing a completely new system in the city. The company is also constructing a system of microwave towers to connect Manaus, by telephone, to the major cities in the interior for the first time. In 1968, the new service already linked Manaus to Itacoatiara, Manacapuru, Parintins, and Coari. The microwave system is now being extended to an additional thirteen communities which are expected to have service by 1970. The state system of microwave telephones will eventually be incorporated into the new system of telecommunications when the latter is completed.[35]

The three radio stations in Manaus provide a much-needed service in the communications deficient state. In addition to their regular programs, the stations regularly broadcast programs of unilateral communications to the interior. Personal messages of all types are transmitted over the air at a specified time each day as a public service. Although the listeners to whom the message is directed cannot answer, they can react. At best the practice provides a tenuous connection between the capital and the interior.

There are only three other radio stations in the state. Tefé and Coari each have a local station which broadcasts educational information over a limited area, and a short-range commercial station transmits from Itacoatiara. Shortwave receivers can pick up national and international broadcasts, which partially compensate for the sparsity of local stations.

The publications and distribution of newspapers in Amazonas are largely confined to Manaus. In the capital newspaper circulation is widespread; in the interior it is almost non-existent. Four daily newspapers are published in the city, three in the morning and one in the afternoon, and each paper has a slightly different emphasis. The Jornal do Comercio concentrates on local news, while O Jornal and Diario da Tarde, the morning and afternoon editions of the same newspaper, combine state and national news with

brief international notices. A Critica, which has wire photo and teletype service direct from New York, carries the most international news and lots of photographs.

Itacoatiara and Parintins are the only interior cities regularly receiving newspapers from Manaus. O Jornal and A Critica each send about one hundred copies a week, by commercial flights, to each of these cities.[36] Newspapers, like so many other benefits and services, continue to be concentrated in the capital.

NOTES

1. "Grupamento de Elementos de Fronteira," O Jornal, Manaus, 11 August, 1968, p. 5.

2. Neper Antony, Superintendência de Desenvolvimento da Amazonia, Manaus office. Personal interview in Manaus, 13 March, 1968.

3. Heleno Montenegro, Instituto Nacional de Providencia Social, Manaus office. Personal interview in Manaus, 7 August, 1968.

4. Regional Director of Departamento Nacional de Estradas e Rodoviara. Personal interview in Manaus, 21 Oct., 1968.

5. Regional Director of Superintendência Nacional de Abastecimento. Personal interview in Manaus, 21 Oct., 1968.

6. Regional Director of Instituto Brasileiro de Reforma Agraria. Personal interview in Manaus, 2 Sept., 1968.

7. Regional Director of Asscciação de Credito e Assistencia Rural do Amazonas. Personal interview in Manaus, 25 June, 1968.

8. Programa Setorial de Desenvolvimento Agropecuário de Amazonas 1968/72 (Manaus: Secretaria de Produção, 1968), p. 51.

9. Regional Secretary of the Council Nacional de Bishops Brasileiros. Personal interview in Manaus, 1 July, 1968.

10. Amazonas, Pará, Territorios, Vol. XIV of Enciclopédia dos Municípios Brasileiros (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1957), p. 195.

11. Banco da Amazonia S.A., Relatoria do Exercicio de 1966 (Belém: Banco da Amazonia, 1967). The bank's agencies in Western Amazonia are located in: (1) Amazonas--Manaus, Itacoatiara, Parintins, Maués, Coari, Eirunepé, and Benjamin Constant; (2) Acre--Cruzeiro do Sul, Feijó, Sena Madureira, Tarauacá, and Xapuri; (3) Rondonia--Pôrto Velho, and Guajará-Mirim; and (4) Roraima--Boa Vista.

12. Movimento Bancário do Brasil 1967 (Rio de Janeiro: Serviço de Estatística Econômica e Financeira, 1968), p. 40. (Hereinafter referred to as Movimento Bancário.) The bank's agencies in Western Amazonia are located in: (1) Amazonas--Manaus, Itacoatiara, Parintins, and Tefé; (2) Rondonia--Pôrto Velho and Guajará-Mirim; (3) Acre--Rio Branco and Cruzeiro do Sul; and (4) Roraima--Boa Vista.

13. Banco do Estado do Amazonas S.A., Relatorio 1967 (Manaus: Banco do Estado do Amazonas, 1968). (Hereinafter referred to as Banco do Estado do Amazonas.)

14. Movimento Bancário, p. 28.

15. Banco do Estado do Amazonas.

16. Plano Quinquenal do Governo de Estado do Amazonas, 1968-1972 (Manaus: Comissão de Desenvolvimento Econômico do Estado do Amazonas, 1968), p. 258. (Hereinafter referred to as Plano Quinquenal.)

17. Movimento Bancário, p. 40.

18. Plano Quinquenal, p. 57.

19. Ibid.

20. Ibid., pp. 69-70.

21. Ibid.

22. Antonio Loureiro, Assistant Secretary of Health. Personal interview in Manaus, 22 April, 1968.

23. Ibid.

24. Dr. Antonio. Personal interview in Coari, Amazonas, 25 Sept., 1968.

25. Dr. Joaquim. Personal interview in Tefé, Amazonas, 22 Sept., 1968.

26. Secretaria de Saúde (unpublished data provided by that office in Manaus, 19 April, 1969).

27. Dr. Dourado, Campanha de Controle e Erradicação da Malaria, Manaus office. Personal interview in Manaus, 2 May, 1968.

28. Ibid.

29. Regional Secretary of the Council Nacional de Bishops Brasileiros. Personal interview in Manaus, 1 July, 1968.

30. Ron Lots, New Tribes Mission. Personal interview in Manaus, 24 April, 1968.

31. Bill Barkley, Livaria Cristão. Personal interview in Manaus, 1 July, 1968.

32. Censo Demográfico de 1960, Acre, Amazonas, Pará (Rio de Janeiro: Serviço Nacional de Recenseamento, 1967), p. 129.

33. Ibid.

34. Director of the Departamento dos Correios e Telégrafos do Amazonas e Acre. Personal interview in Manaus, 9 May, 1968.

35. Jose Maria Pinto, Companhia Amazonense de Telecomunicações, Manaus, Amazonas. Personal interview in Manaus, 6 March, 1968.

36. Publisher of O Jornal, Manaus, Amazonas. Personal interview in Manaus, 27 April, 1968. Publisher of A Critica, Manaus, Amazonas. Personal interview in Manaus, 28 April, 1968.

THE COMMERCIAL HUB OF WESTERN AMAZONIA: A TRADITIONAL FUNCTION

The international demand for Amazonian rubber between 1870 and 1912 sparked the development of Manaus and the natural harbor and central location combined to establish the city as the principal interior collecting and transshipment point for raw rubber. Concomitantly, it emerged as the major break-of-bulk and redistribution center in the Amazonian interior for the foodstuff and supplies necessary to sustain life in the capital and the interior. Other regional products have since reduced the importance of rubber, but commerce continues to command a preponderant position in the city's economy. Manaus was built on trade and if industrial development has modified the city's previous raison d'être it has not diminished but encouraged its commercial activity.

Recent Port Activity

In Amazonas, a state dependent upon fluvial transport, every community has a port. Only four of these ports, however, are engaged in anything other than local activity: Manaus, Parintins, Itacoatiara, and Boca do Acre. All direct imports into Amazonas from foreign countries have to

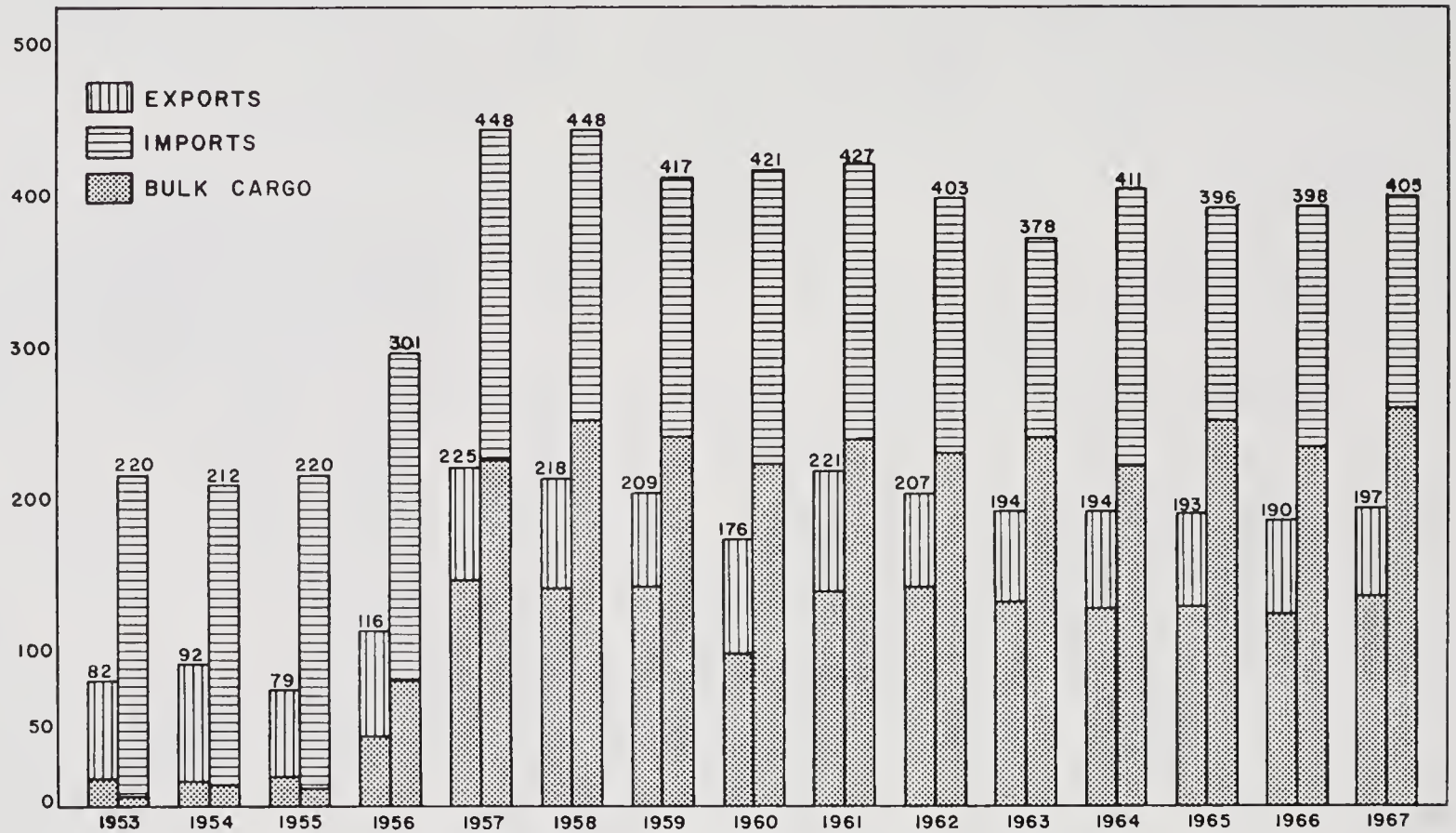
enter through the Port of Manaus. Boca do Acre, Parintins, and Itaccatiara import and export cargo by cabotagem and the latter two also export regional products directly to foreign countries. In relation to the Port of Manaus, which handles 95 per cent of the state's total imports and exports, the amount of cargo moving through the other three ports is relatively insignificant.

Until the federal government intervened in 1963, the Manaus port functioned as a private concession called Manaos Harbour Limited. After it came under federal control most of the old port records, including those pertaining to port activity, were removed and destroyed to make room for the new operation. No records of port activity prior to 1953 still exist in Manaus. Fortunately the same slow, inefficient record-keeping procedures were retained by the new administration so the Port of Manaus now has a fifteen-year record (1953-1967) of comparable data on port activity. See Figure 6.

The International Classification of Merchandise, which is widely used throughout Brazil--even by the state department of statistics in Manaus--has still not been adopted by the Port of Manaus. Instead, they rely on the older, more time-consuming system of listing each item by descriptive name. Consequently, they were still trying to complete the record of port activity for 1967, when this writer left Manaus in October of 1968. Another major

MANAUS PORT ACTIVITY 1953-1967

(1,000 TONS)



Source: Port of Manaus (Unpublished data for 1953-1966)
Serviço de Estatistica Econômica e Financeira (Unpublished data for 1967)

Figure 6

deficiency in the port records is a lack of monetary values for imports and exports, which makes a time comparison of port activity by value an impossibility. The Ministério da Fazenda keeps a record, using the International Classification of Merchandise and current values, of all imports and exports of each state. It was an invaluable source of data for analyzing import and export activity for Amazonas in 1967.

The Port of Manaus recorded a sharp increase in total tonnage handled during the last fifteen years. In 1953, 82,595 tons of cargo were exported and 220,580 tons were imported.[1] By 1967, port cargo had increased to 197,717 tons exported and 405,322 tons imported. As Figure 6 illustrates, the principal increase in exports and imports occurred in 1956 and 1957; since then overall port activity has experienced a slight decline. The oil refinery in Manaus began production in 1956, and reached full capacity in 1957. The flow of crude oil imported by the refinery and the subsequent export of gasoline, diesel oil, and kerosene account for the marked increase at that time and for the corresponding increase in the percentage of bulk cargo passing through the port.

In 1953, only 3 per cent of the imports and 8 per cent of the exports were bulk cargo. Imports consisted of gasoline, kerosene, diesel oil, and salt. Exports were confined to bulk shipments of Brazil nuts. In 1967, bulk

cargo constituted 65 per cent of all imports (crude oil, wheat, and salt) and 71 per cent of all exports (gasoline, diesel oil, kerosene, and Brazil nuts). A much smaller, but noticeable increase in imported bulk cargo, beginning in 1965, coincides with the opening of a flour mill in Manaus and the importation of wheat from the United States and Argentina.

In absolute terms, the amount of general cargo handled by the Port of Manaus showed a slight decline in exports and a decided decline in imports during the past fifteen years. The overall increase in imports and exports shown by the Port of Manaus has had no real influence on port facilities or the local labor force. The port still has no facilities for storing bulk cargo. Crude oil is pumped from the tankers and barges which deliver it directly into the storage tanks of the refinery--some nine kilometers downriver. Wheat is mechanically unloaded and stored at the flour mill which is about four kilometers below the port. Although these imports are registered as constituting a large portion of the total handled by the port, they contribute nothing in the way of jobs at the Port of Manaus.

Exit Port Functions

Depending on the origin and nature of the cargo, the Port of Manaus simultaneously functions as a port of entry for goods arriving from southern Brazil and foreign

countries, most of which is handled or processed in Manaus and then shipped out to the interior of the state and the rest of Western Amazonia, and as a collecting point and exit port for regional products destined for national or foreign ports. Industrial Brazil, the southern portion of the country, has long since replaced foreign countries as the major market for Amazonian products and supplier of their manufactured necessities.

The export of regional products constitutes only a small percentage, by weight, of the total cargo passing through this port. In 1967, regional products accounted for 54,107 tons, 25.8 per cent, of the 209,905 tons of freight shipped from the state of Amazonas.[2] The Port of Manaus handled 94.4 per cent of the total exports, but the ports of Itacoatiara and Parintins exported 21.9 per cent of the state's regional products in 1967.[3]

The total value of exports from Amazonas in 1967, amounted to NCr$111,986,916; regional products represented 69.7 per cent of that sum--NCr$78,156,934.[4] Exports leaving from the ports of Itacoatiara and Parintins comprised 8.8 per cent of the total value of exports and 11.3 per cent of the value of regional products.

With the notable exception of jute and black pepper, both introduced to the region by Japanese colonists, the export of regional products remains heavily weighted in favor of the traditional tropical products provided by

nature. See Table 4. Jute has become the single most important item in the regional economy in terms of both volume and value. The recent installation of jute-weaving mills in Manaus has greatly increased the export value of the crop while providing needed employment for urban residents. A small percentage of the Brazil nuts are now shelled prior to exporting; a portion of the wood is converted to plywood, and rubber is mechanically processed before it is exported, but local processing of regional products, which adds value to these exports and provides jobs for the local labor force, is still the exception in Amazonas. Only a small percentage of the regional products exported from Amazonas are from the rest of Western Amazonia. Exports to Amazonas from Acre, Rondonia, and Roraima combined amounted to only 5,894 tons in 1967. Assuming that these imports were all regional products destined for eventual export from Amazonas, which they were not, since returnable containers and other non-local products were included, the remainder of Western Amazonia would still be contributing only 10 per cent of the regional products exported from Amazonas that year. Obviously, the majority of these exports, at least 90 per cent, originated within the state.

The 54,107 tons of regional exports were unevenly distributed between twenty Brazilian states and twenty-one foreign countries. Brazilian ports imported 36,609 tons, with the state of São Paulo receiving 50 per cent of that

TABLE 4

REGIONAL PRODUCTS EXPORTED FROM AMAZONAS--1967

Item	Weight (kilograms)	Value (NCr$)
Jute		
1. Unprocessed	16,209,330	12,222,757
2. Processed	2,290,721	1,988,435
3. Material	1,496,237	1,930,740
4. Sacks	7,503,163	12,843,731
Total	27,499,451	28,985,663
Rubber (all categories)	7,518,385	17,103,646
Wild Animal Skins	611,608	7,796,455
Brazil Nuts		
1. Unshelled	4,983,963	5,837,905
2. Shelled	372,600	1,036,031
Total	5,356,563	6,873,936
Vegetable Gum (non-elastic)	3,567,642	6,515,152
Rosewood Oil	261,361	3,691,711
Wood		
1. Logwood	1,038,924	148,785
2. Lumber	2,269,772	829,810
3. Plywood	1,796,731	1,240,371
Total	5,105,427	2,218,966
Piaçaba[a]	1,960,820	2,175,229
Pirarucu[b]	704,683	985,499
Cattle Hides	789,561	434,890
Black Pepper	290,810	355,983
Live Animals and Tropical Fish	40,600	261,829
Cacao	180,460	225,219
Guarana[c]	110,430	179,532
Miscellaneous	109,240	373,224
Total	54,107,041	78,156,934

Source: Ministério da Fazenda (unpublished data provided by the Serviço de Estatística Econômica e Financeira in Rio de Janeiro, Jan., 1969).

[a]A local fiber used for making brooms and brushes.

[b]A large local fish whose flesh is salted, dried, and exported.

[c]A local fruit used to make a popular soft drink.

amount. The remaining 17,498 tons went to foreign countries with the United States being the major importer--with almost 30 per cent of the total. See Table 5. The major products destined for the United States, by value, were: alligator hides, sorva, Brazil nuts, and rosewood oil.[5]

The bulk of cargo exported from Amazonas is classified as nationalized exports. This category includes products imported from foreign countries and processed in Brazil. In Amazonas' case it means the finished products which emerge from the Manaus oil refinery and flour mill. Both are supplied by bulk cargo from foreign countries. In 1967, nationalized cargo exported from Amazonas totaled 143,146 tons, or 68.2 per cent of all exports.[6] By weight, this category of freight dominates exports, but it accounted for only 23.9 per cent of the state's total export value.

As Figure 6 demonstrates, the installation of the refinery in Manaus in 1956 had a dramatic effect on total imports and exports. In 1967, products from the local refinery accounted for 65 per cent (138,102 tons) of Amazonas' total exports by weight and 22 per cent by value.[7] Within Amazonia, the refinery provided no less than 88 per cent by weight, and 73 per cent by value, of all exports from Amazonas. For the respective states and territories of Amazonas, the percent of cargo imported from Amazonas which originated at the Manaus refinery was: Amapá (99 per cent), Pará (95 per cent), Rondonia (77 per cent), Acre

TABLE 5

DESTINATION OF AMAZONAS EXPORTS 1967

Rank	State (National)	Weight (kilograms)	Value (NCr$)	Rank
1.	Pará	98,973,491	21,279,519	2
2.	São Paulo	18,317,454	27,252,178	1
3.	Rondonia	18,001,569	3,906,234	5
4.	Ceará	12,897,869	3,249,820	8
5.	Acre	10,299,288	3,411,321	9
6.	Maranhão	8,951,937	1,821,264	10
7.	Guanabara	7,069,626	4,918,183	3
8.	Pernambuco	3,836,798	3,484,631	7
9.	Amapá	3,733,882	657,915	13
10.	Paraná	2,687,110	4,312,657	4
11.	Rio Grande do Sul	2,514,961	3,559,964	6
12.	Roraima	2,371,493	1,283,091	12
13.	Rio de Janeiro	1,593,283	1,484,751	11
14.	Espírito Santo	431,984	436,570	14
15.	Alagoas	254,476	382,003	15
16.	Rio Grande do Norte	61,076	13,745	18
17.	Bahia	55,700	87,715	16
18.	Santa Catarina	19,546	20,484	17
19.	Paraíba	6,660	9,135	20
20.	Piauí	6,100	12,304	19
Total		192,094,303	81,563,484	

TABLE 5 (continued)

Rank	Country (International)	Weight (kilograms)	Value (NCr$)	Rank
1.	United States	5,226,986	14,243,339	1
2.	Argentina	4,881,380	3,778,141	2
3.	Great Britain	2,596,987	3,750,223	3
4.	Peru	1,394,519	1,649,788	5
5.	West Germany	1,289,367	2,142,322	4
6.	Holland	555,404	406,061	10
7.	Japan	428,100	1,166,464	6
8.	Portugal	383,000	363,396	11
9.	Belgium	204,540	196,274	12
10.	Czechoslovakia	145,000	172,619	14
11.	France	116,484	977,631	7
12.	Canada	66,040	99,162	15
13.	Trinidad	65,751	37,905	16
14.	Dominican Republic	62,044	34,799	17
15.	Soviet Union	35,277	536,531	9
16.	Guyana	30,382	194,703	13
17.	Spain	4,980	29,451	18
18.	Switzerland	4,678	619,724	8
19.	South Africa	4,318	4,813	20
20.	Italy	1,750	15,449	19
21.	Mexico	1,230	4,637	21
Total		17,498,217	30,423,432	

Source: Ministério da Fazenda (unpublished data provided by the Serviço de Estatística Econômica e Financeira in Rio de Janeiro, Jan., 1969).

(60 per cent), and Roraima (14 per cent).[8]

The overall destination of exports from Amazonas, as shown by Table 5 and Figure 7, was widely dispersed both nationally and internationally in 1967. In the national market the states of Pará and São Paulo were the main importers. The former imports petroleum products and the latter receives regional products. Internationally, Europe and the United States are the major markets for Amazonas' products.

Port of Entry and Distribution Center

For at least the last fifteen years, and probably much longer than that, the state of Amazonas has imported considerably more than it exported. In 1967 the state exported 209,592 tons of freight value at NCr$111,986,916; the same year it imported 405,322 tons of merchandise worth NCr$124,219,651. The major volume of imports, 287,159 tons, originated in foreign countries; although, by value, Brazil easily dominated the import trade with its NCr$98,275,984 worth of cargo. See Table 6 and Figure 8.

In the last three years the state of Amazonas has gone from a NCr$9 million balance of trade surplus in 1965 to a NCr$12 million deficit in 1967.[9] The state's financial problem is the result of a rapidly increasing balance of trade deficit with the rest of Brazil--not with its foreign trade which continues to show a favorable balance. As an

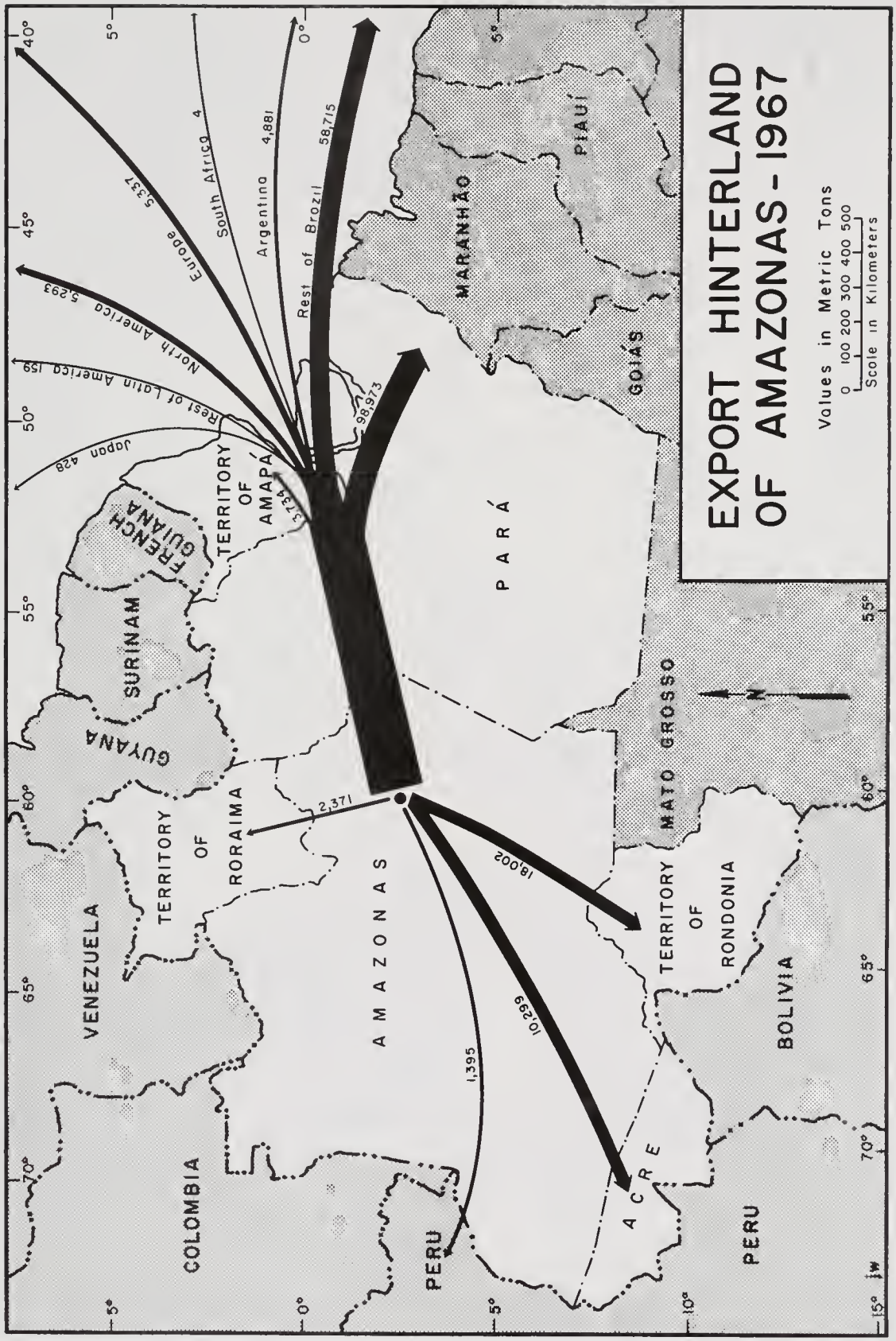

EXPORT HINTERLAND
OF AMAZONAS - 1967
Values in Metric Tons
0 100 200 300 400 500
Scale in Kilometers
Europe 5,337
North America 5,293
Rest of Latin America 159
Japan 428
South Africa 4
Argentina 4,881
Rest of Brazil 58,715
98,973
2,371
1,395
10,299
18,002
AMAZONAS
PARÁ
MARANHÃO
PIAUÍ
GOIÁS
MATO GROSSO
TERRITORY OF RORAIMA
TERRITORY OF AMAPÁ
TERRITORY OF RONDONIA
ACRE
VENEZUELA
COLOMBIA
PERU
BOLIVIA
GUYANA
SURINAM
FRENCH GUIANA
N

Figure 7

TABLE 6

ORIGIN OF AMAZONAS IMPORTS 1967

Rank	State (National)	Weight (kilograms)	Value (NCr$)	Rank
1.	Guanabara	28,143,480	22,606,237	2
2.	Pará	26,203,723	19,892,164	3
3.	São Paulo	17,240,741	35,364,383	1
4.	Pernambuco	16,086,744	6,824,797	4
5.	Ceará	7,920,616	4,284,809	5
6.	Rio Grande do Sul	3,752,863	1,579,449	7
7.	Alagoas	3,440,986	1,157,825	8
8.	Bahia	3,207,244	610,801	11
9.	Rondonia	2,319,883	3,001,300	6
10.	Roraima	2,304,617	718,788	10
11.	Espírito Santo	2,100,000	203,000	14
12.	Paraná	1,750,020	58,334	16
13.	Acre	1,269,007	1,138,204	9
14.	Paraíba	942,413	417,023	12
15.	Rio de Janeiro	750,000	25,500	17
16.	Rio Grande do Norte	577,648	209,187	13
17.	Maranhão	138,778	165,095	15
18.	Amapá	10,033	2,651	19
19.	Sergipe	3,800	16,437	18
Total		118,162,596	98,275,984	

Rank	Country (International)	Weight (kilograms)	Value (NCr$)	Rank
1.	Nigeria	130,051,984	5,182,238	2
2.	Venezuela	68,500,693	3,830,320	3
3.	Peru	49,656,239	2,019,456	6
4.	Argentina	12,504,400	2,510,664	4
5.	Poland	9,730,000	456,490	9
6.	United States	7,420,162	5,633,867	1
7.	Romania	4,054,000	196,295	13
8.	Colombia	3,400,062	211,240	12
9.	Holland	439,510	435,192	10
10.	Great Britain	419,225	2,037,121	5
11.	Belgium	221,328	159,646	14
12.	Portugal	180,341	250,287	11
13.	Japan	136,503	543,783	8
14.	West Germany	132,829	132,429	16

TABLE 6 (continued)

Rank	Country (International)	Weight (kilograms)	Value (NCr$)	Rank
15.	Canada	117,892	57,049	20
16.	Panama	73,690	1,774,493	7
17.	Denmark	73,305	107,476	18
18.	Norway	19,017	58,570	19
19.	Spain	10,000	23,577	22
20.	Guyana	9,913	139,178	15
21.	Sweden	3,629	45,161	21
22.	France	2,496	120,830	17
23.	Switzerland	892	7,686	23
24.	Finland	817	1,518	26
25.	Czechoslovakia	799	5,579	24
26.	Surinam	164	3,155	25
27.	Italy	23	367	27
Total		287,159,913	25,943,667	

Source: Ministério da Fazenda (unpublished data provided by the Serviço de Estatística Econômica e Financeira in Rio de Janeiro, Jan., 1969).

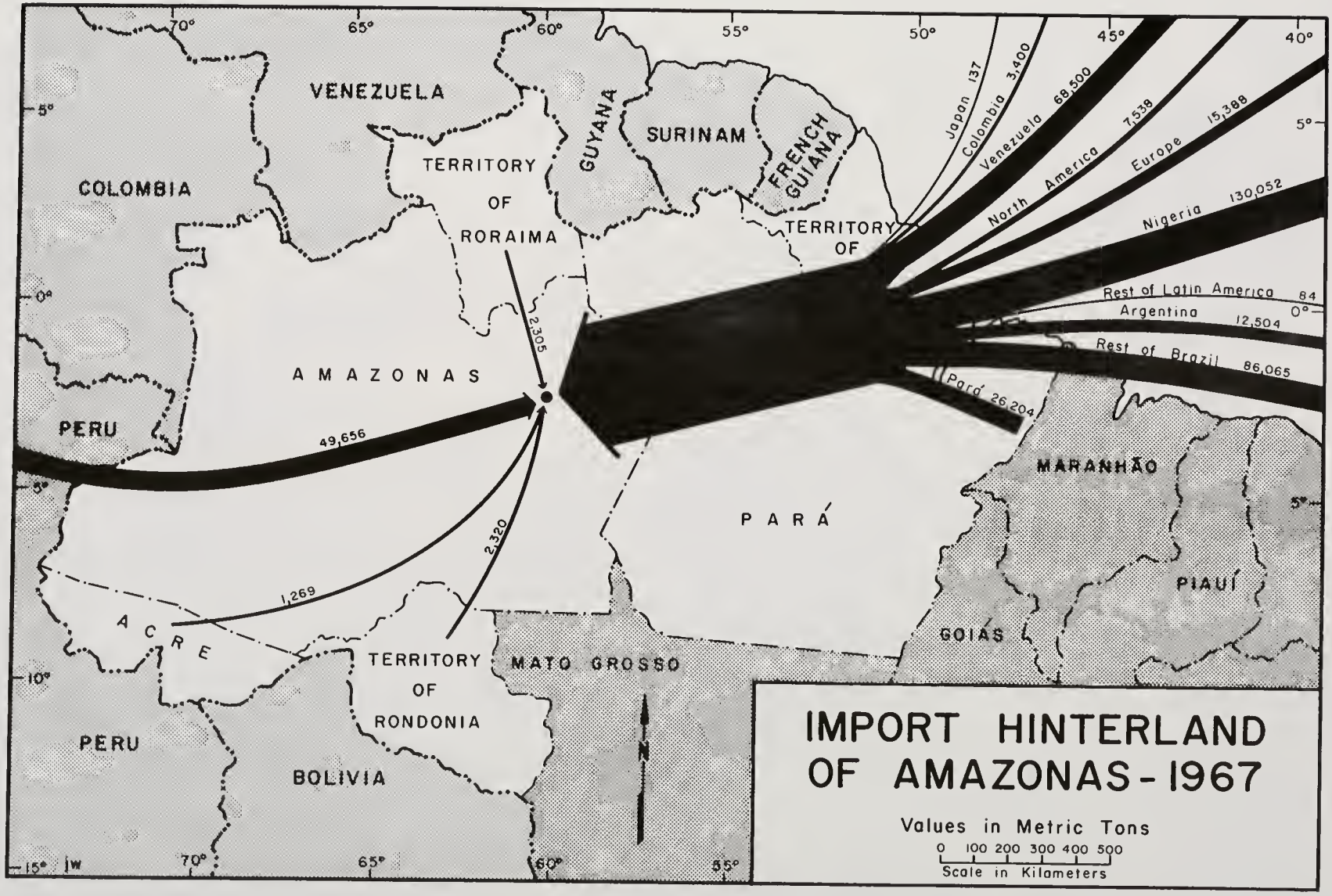

VENEZUELA
COLOMBIA
GUYANA
SURINAM
FRENCH GUIANA
TERRITORY OF RORAIMA
TERRITORY OF AMAPÁ
AMAZONAS
PERU
PARÁ
MARANHÃO
PIAUÍ
GOIAS
MATO GROSSO
ACRE
TERRITORY OF RONDONIA
PERU
BOLIVIA
Japan 137
Colombia 3,400
Venezuela 68,500
North America 7,538
Europe 15,388
Nigeria 130,052
Rest of Latin America 84
Argentina 12,504
Rest of Brazil 86,065
Pará 26,204
2,305
49,656
2,320
1,269
IMPORT HINTERLAND OF AMAZONAS - 1967
Values in Metric Tons
0 100 200 300 400 500
Scale in Kilometers

Figure 8

exporter of raw materials and an importer of manufactured goods, Amazonas continues to exemplify a colonial economy, only now it is a colony of southern Brazil instead of the United States or Great Britain.

The high volume, relatively low-value foreign imports were concentrated among eight of the twenty-seven contributing countries. See Table 6. Crude oil, cement, and wheat accounted for 98 per cent of foreign imports in 1967. Nigeria, Peru, and Venezuela combined to ship 248,205 tons of crude oil to Manaus. Colombia, Romania, and Poland shipped 17,180 tons of cement, while Argentina and the United States sent 16,405 tons of wheat. Although these three items constituted 98 per cent of foreign imports by weight, their combined value only totaled 58 per cent of the total value of foreign imports. Excluding crude oil, cement, and wheat, Amazonia only imported 5,368 tons of general cargo worth NCr$10,762,868 from foreign countries in 1967.[10]

A better comprehension of the Amazonas import market is obtained by separating imported merchandise into the eight major classes. See Table 7. The local importance of the oil refinery is reemphasized by the unproportionate share of imports in class two, which is dominated by crude oil. In a non-industrial state, manufactured goods are natural high value imports and in Amazonas, classes five, six, seven, and eight, while only 19 per cent of all imports by weight, accounted for 54 per cent of the total value of

TABLE 7

MERCHANDISE IMPORTED BY THE STATE OF AMAZONAS IN 1967 BY CLASS, WEIGHT, AND VALUE

Class	Weight (kilograms)	Value (NCr$)
1. Live Animals	3,283,980	1,071,812
2. Primary Materials--Raw and Prepared	287,866,349	21,126,741
4. Foodstuffs and Beverages	69,061,382	33,487,025
5. Chemical Products, Pharmaceuticals and Others	5,703,873	9,876,779
6. Machines and Vehicles: Their Parts and Accessories	4,691,403	23,225,943
7. Manufactured Goods: Classified According to Primary Material	31,165,467	19,485,537
8. Diverse Manufactured Goods	2,639,436	14,916,447
9. Gold. Money. Special Transactions	910,619	1,029,367
Total	405,322,509	124,219,651

Source: Ministério da Fazenda (unpublished data provided by the Serviço de Estatística Econômica e Financeira in Rio de Janeiro, Jan., 1969). Classification of merchandise according to Nomenclatura Brasileira de Mercadorias (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1952), p. 3. Class three is unused.

imports. If the 17,180 tons of imported cement are subtracted from class seven, these values would be reduced to 6 per cent and 53 per cent respectively.

The colonial nature of Amazonas' economy is further emphasized by the high proportion of imports in class four. More money was spent for the importation of foodstuffs and beverages in 1967, 26.9 per cent, than for any of the other seven classes of merchandise. One of Amazonas' most serious problems, economically and socially, is the widespread discrepancy between the amount of foodstuff needed to sustain the local population and the quantity of foodstuff produced in the state.

Amazonas is a meat deficient state and the city of Manaus is dependent upon the importation of live beef cattle from Roraima and the Lower Rio Amazonas, in the state of Pará. Imported live animals, class one, are virtually all cattle coming from those two sources to supply Manaus. All of these animals are consumed in the capital while the interior communities continue to rely upon a very irregular local supply.

Japanese colonists in the vicinity of Manaus are largely responsible for that city's regular supply of fresh vegetables, chickens, and eggs. Most of these colonists raise laying chickens in conjunction with their cultivation of black pepper. The chickens provide eggs for the local market and fertilizer for the black pepper which is grown

for export. These colonists also raise vegetables to sell in the city markets. Many Brazilian farmers have started raising vegetables for the local market, and Manaus is well supplied with fresh fruits, vegetables, and eggs. The tropical fruits are available throughout the region, but vegetables are scarce in the interior.

With the exception of fresh vegetables, farinha, fish and eggs, almost all of the local food is imported. Rice, beans, sugar, salt, coffee, and powdered milk are major imported food items. Dairy products, of all sorts, and canned meats also constitute a considerable portion of food imports. Beer from Belém and especially from São Paulo is another major item in this category. Manaus has nine bottling plants manufacturing non-alcoholic drinks, which adequately meet the regional demand, and one decrepit brewery whose product only the most desperate will consume.

The recent establishment of the Zona Franca generated a considerable amount of interest in increasing the industrial output of the city and the state. Improved agriculture and a corresponding increase in local food production, which would appear to be an obvious necessity, continues to be secondary to substituting industrial production for the traditional collecting and gathering which has characterized the Amazonian economy for such a long time. The lack of food production can be attributed, in large part, to the continuing shortage of capital and

trained experts in tropical agriculture, both of which are required for the application of modern agricultural technology.

Intra-Amazonian Trade

An analysis of the total flow of trade within Amazonia provides some perspective on the comparative functions of Manaus and Belém as regional centers of commerce. The data in Figures 9 and 10 represent the volume and value of all cargo moving between the political units of Amazonia. As the figures reveal, a very small proportion of the regional cargo is shipped by air. Since it became the primary source of petroleum products in the region, Amazonas has been the major exporter by weight, but it is still second to Pará in value of regional exports. Petroleum products accounted for 101,082 tons, 83 per cent, of the total exports from Amazonas to the rest of the region. Pará is still the major regional importer in terms of volume and value, although 75 per cent of its imports are petroleum products from Amazonas.

If the trade between Pará and Amazonas, which constitutes the bulk of the regional trade, is disccunted, it is possible to discern the comparative importance of Manaus and Belém as commercial centers in Amazonia. By volume, the largest share of regional trade originates in Manaus, with Amazonas shipping a total of 34,478 tons of

VOLUME OF INTRA-AMAZONIAN TRADE 1967

(Metric Tons)

Exports \ Imports	Amazonas	Pará	Territory of Rondonia	Acre	Territory of Amapá	Territory of Roraima	TOTAL
Amazonas		98,973.4	18,001.5	10,299.9	3,733.8	2,371.4	133,380.0
		56.2	8.2	39.2	0.0	24.1	127.7
		99,029.6	18,009.7	10,339.1	3,733.8	2,395.5	133,507.7
Pará	26,203.7		5,810.6	7,592.2	13,145.9	920.4	53,672.8
	80.1		13.5	23.3	178.0	12.8	307.7
	26,283.8		5,824.1	7,615.5	13,323.9	933.2	53,980.5
Territory of Rondonia	2,319.8	1,111.8		10.9	3.1	192.3	3,637.9
	9.9	1.3		309.0	-	.6	320.8
	2,329.7	1,113.1		319.9	3.1	192.9	3,958.7
Acre	1,269.0	10,573.8*	-		-	-	11,842.8
	.2*	22.2*	-		-	-	22.4
	1,269.2	10,596.0	-		-	-	11,865.2
Territory of Amapá	10.0	1,958.3	-	-		-	1,968.3
	1.0	5.3	-	-		-	6.3
	11.0	1,963.6	-	-		-	1,974.6
Territory of Roraima	2,304.6	53.9	5.5	-	-		2,364.0
	3.3	2.6	-	-	-		5.9
	2,307.9	56.5	5.5	-	-		2,369.9
TOTAL	32,107.1	112,671.2	23,817.6	17,903.0	16,882.8	3,484.1	206,865.8
	94.5	87.6	21.7	371.5	178.0	37.5	790.8
	32,201.6	112,758.8	23,839.3	18,274.5	17,060.8	3,521.6	207,656.6

Line 1 Ship Cargo — No Trade
Line 2 Air Freight * 1966 Data
Line 3 Total

Source: Serviço de Estatística Econômica e Financeira (Unpublished data)

Figure 9

VALUE OF INTRA-AMAZONIAN TRADE 1967

(1,000 NCr$)

Exports \ Imports	Amazonas	Pará	Territory of Rondonia	Acre	Territory of Amapá	Territory of Roraima	TOTAL
Amazonas		21,279.5 95.2 21,374.7	3,906.2 94.9 4,001.1	3,411.3 161.4 3,572.7	657.9 .0 657.9	1,284.0 133.7 1,417.7	30,538.9 485.2 31,024.1
Pará	19,892.1 1,635.4 21,527.5		5,874.1 223.3 6,097.4	5,773.6 423.0 6,196.6	12,757.2 977.4 13,734.6	865.7 214.4 1,080.1	45,162.7 3,473.5 48,636.2
Territory of Rondonia	3,001.3 14.7 3,016.0	1,160.6 3.2 1,163.8		39.7 1,189.6 1,229.3	24.6 - 24.6	318.8 4.7 323.5	4,545.0 1,212.2 5,757.2
Acre	1,138.2 6.2* 1,144.4	7,679.2 80.4* 7,759.6	- - -		- - -	- - -	8,817.4 86.6 8,904.0
Territory of Amapá	2.6 13.0 15.6	1,230.1 33.7 1,263.8	- - -	- - -		- - -	1,232.7 46.7 1,279.4
Territory of Roraima	718.7 .9 719.6	2.0 27.9 29.9	.7 - .7	- - -	- - -		721.4 28.8 750.2
TOTAL	24,752.9 1,670.2 26,423.1	31,351.4 240.4 31,591.8	9,781.0 318.2 10,099.2	9,224.6 1,774.0 10,998.6	13,439.7 977.4 14,417.1	2,468.5 352.8 2,821.3	91,018.1 5,333.0 96,351.1

Line 1 Ship Carga — No Trade
Line 2 Air Freight * 1966 Data
Line 3 Total

Source: Serviço de Estatística Econômica e Financeira (Unpublished data)

Figure 10

cargo to Rondonia, Acre, Amapá, and Roraima, compared to 27,696 tons from Pará. The bulk of exports from Amazonas, 24,323 tons--some 70 per cent, are petroleum products from the Manaus refinery. Most of the exports from Pará are general cargo. The difference in value between the two types of cargo is reflected in the respective values of exports. Pará's exports to Rondonia, Acre, Amapá, and Roraima in 1967 were valued at NCr$27,108,700 compared to NCr$9,649,400 for Amazonas.

The relative importance of the two cities as export centers for regional products originating in the other four political units in Amazonia is quite similar. Pará imported 13,729 tons of cargo from the rest of Amazonia, which is more than twice the 5,917 tons imported by Amazonas. In the value of these imported regional products, Pará totaled NCr$10,217,100 compared to NCr$4,895,600 for Amazonas.

In overall terms, Belém (Pará) is more important than Manaus (Amazonas) as a regional trade center. There is a considerable amount of concentration, however, with Belém being the major commercial center for Amapá and Acre, while Manaus predominates in regional trade with Roraima and Rondonia. Amapá, obviously, has little reason to trade with Amazonas, other than to purchase refined petroleum products, and Roraima, due to transportation difficulties, remains dependent upon Amazonas. In the past, both Rondonia and Acre carried on more trade with Belém than with

Manaus; but, the new Brasilia-Acre road has already radically modified Rondonia's trade patterns and when the road reaches Rio Branco, Acre, it will, in all likelihood, have a similar effect.

In 1965, when the Brasilia-Acre road was only passable during the dry season, Rondonia exported 7,880 tons of cargo by cabotagem and 1,191 tons by truck. The state of Pará imported 4,863 tons of that cargo while Amazonas only received 810 tons. The remainder went directly to southern Brazil.[11] Two years later, exports by cabotagem declined to 3,646 tons while overland exports increased to 5,474 tons,[12] and Pará's share of regional exports from Rondonia declined to 1,113 tons. In contrast, trade with Amazonas increased to 2,329 tons.

The increase in trade between Rondonia and Amazonas, and between Rondonia and Roraima is a direct result of the new road. Manufactured goods from southern Brazil are now traveling overland to Pôrto Velho, where they are shipped downriver to Manaus and then on to Boa Vista, faster than they can come by ship from southern Brazil. Rondonia is exporting most of its regional products overland and Acre will soon be doing likewise. The new road has already greatly reduced trade between Belém and Rondonia, and it can be expected to have a similar influence on the Belém-Acre trade in the near future.

NOTES

1. Metric tons--2,204 pounds.

2. Ministério da Fazenda (unpublished data provided by the Serviço de Estatística Econômica e Financeira in Rio de Janeiro, Jan., 1969). These totals do not include air cargo exported from Amazonas in 1967. According to Comércio por Vias Internas, Exportação do Amazonas, 1967 (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1968), the state exported 313.3 tons of cargo valued at NCr$2,120,638 by means other than ship. Regional products constituted 192 tons worth NCr$999,452.

3. Ministério da Fazenda.

4. Ibid.

5. Ibid.

6. Ibid.

7. Ibid.

8. Ibid.

9. Anuário Estatística do Brasil, 1968 (Rio de Janeiro: Instituto Brasileiro de Estatística, 1968), pp. 254 and 300.

10. Ministério da Fazenda.

11. Ibid.

12. Ibid.

A DEVELOPING INDUSTRIAL CENTER IN WESTERN AMAZONIA

In the early 1940's the Second World War generated increased demands for raw materials which stimulated an economic revival in Manaus. One by-product of this new boomlet was an increase in small, consumer-oriented industries; bakeries, beverage bottlers, sawmills, brick-yards, furniture makers, and numerous others. During the 1950's industrial expansion spread to the processing of regional raw materials including: rubber, Brazil nuts, animal skins, and, most importantly, jute. The establishment of the Manaus oil refinery also took place in that decade. The 1960's witnessed a continued growth of the jute industry, the construction of a plywood factory, the opening of a flour mill, and the commencing of construction on a steel mill.

The creation of the Manaus Zona Franca in 1967, with its tax incentives for local industry, stimulated considerable interest in establishing diversified industry in the vicinity of Manaus. By mid 1969, firm plans were formulated for the construction of several new industrial plants, including a cement factory, petrochemical complex, shipyard, and jewelry fabrication plant. The industrial expansion of the last fifteen years has been especially

significant in the transformation of Manaus into something other than an exporter of raw materials and an importer of manufactured goods.

Consumer-Oriented Industries

In 1968, the Secretary of Health ordered a general census of industry and food processing in Manaus in order to update his files on the types of industry, number of establishments and their locations, number of employees, and approximate production taking place in the city. The census was completed in June of that year and it provides a timely description of the size, distribution, and comparative importance of the different segments of the local industry. See Table 8.

The city houses two general categories of industry: those that process raw materials primarily for the export market, and those that produce or process consumer goods for the local market. Within these two groupings some overlapping occurs; the sawmills, for example, sell a considerable portion of their products locally, as do the plywood factory and oil refinery. In general, local producers of consumer goods tend to be small, low-capital investment, family owned and operated establishments. The beverage bottling plants and the flour mill are the primary exceptions to that description, which, nevertheless, holds true for most of the other 170 establishments.

TABLE 8

CENSUS OF INDUSTRY AND FOOD PROCESSING IN MANAUS--JUNE 1968

Type	Number of Plants	Number of Employees
Raw Material Processing:		
1. Jute Mills	6	2,087
2. Sawmills	15	658
3. Plywood Factory	1	508
4. Brazil Nut Processors	3	317
5. Tanneries	7	316
6. Rubber Processing	5	267
7. Oil Refinery	1	241
8. Sorva Processing	3	116
9. Piassava Processing	1	50
	42	4,560
Consumer Oriented Processing:		
1. Bakeries	64	528
2. Brickyards	14	349
3. Beverage Bottlers	9	239
4. Furniture Manufacturers	25	139
5. Naval Construction	6	131
6. Flour Mill	1	80
7. Coffee Mills	7	68
8. Cigarette Manufacturers	4	68
9. Tile Manufacturers	6	66
10. Brewery	1	30
11. Salt Processors	2	54
12. Soap Manufacturers	3	40
13. Hammock Weavers	1	24
14. Mattress Makers	5	18
15. Shoe Makers	4	18
16. Broom Makers	3	17
17. Ice Plant	3	40
18. Oxygen Bottler	1	6
19. Nail Manufacturer	1	5
20. Candle Maker	1	3
21. Alcoholic Beverage Producers	2	3
22. Suitcase Maker	1	2
23. Miscellaneous Food Processors	16	78
	180	2,006
Grand Total	222	6,566

Source: Secretary of Health, Manaus, Amazonas (unpublished census data provided by that office, June, 1968).

The numerous bakeries throughout the city are a good example of small scale local industry. They range in size from the small, one-man operations to the largest which has fifty-four employees. Only thirteen of the sixty-four bakeries in the city employ more than ten workers. The small operations are mostly limited to baking bread and occasionally cookies. Some of the largest shops specialize in producing crackers, cookies, and macaroni products.

Bread is a daily-purchase food item in Manaus and as a consequence the bakeries are spread throughout the city. Easily accessible, these small shops cater to local demands. Twenty of the shops are located in the central part of the city. The other forty-four are scattered throughout the surrounding bairros, with some of the smaller neighborhoods supporting only one local bakery while other larger bairros have as many as seven different establishments.[1]

Most of the brickyards in Manaus are scattered around the periphery of the city where they have easy accessibility to their raw material--the local red earth. The main prerequisites for establishing a brickyard are a mold or molds to form the bricks and a motor to feed the mold with a constant supply of mud. After being formed, the bricks dry in the open air and are then fired in a kiln which varies in sophistication with the amount of capital

invested. Building bricks are the primary output of the local brickyards; some of the larger companies also make terra-cotta pipes and roofing tiles. These companies range in size from a small, three-man operation to the largest which employs seventy-eight men. Four of the fourteen producers have less than five employees; only three have more than thirty workers.[2]

The principal product of the local beverage bottling industry is a guarana drink. It is a carbonated, non-alcoholic drink made from the powder of a local fruit. The largest plant, which employs sixty workers, has a Pepsi-Cola franchise and in addition to bottling both guarana and cola, it also produces orange and grape drinks for the local market. In contrast to most of the other consumer oriented industries, a relatively high capital investment is required to enter into the beverage bottling business.

Containers continue to be an expensive item for both bottlers and consumers. New bottles have to be shipped from southern Brazil and they command a premium price. The cost of drinking a carbonated beverage in a store or cafe is approximately three cents; to take the same beverages home the consumer must pay twenty-five to thirty cents deposit on each bottle. Three of the nine local companies are quite small and each one employs less than ten workers. A fourth company concentrates exclusively on bottling and marketing mineral water. Although there is still some

importation of carbonated drinks into Amazonas, they are basically specialty items. The local bottlers adequately supply the city and state market and ship carbonated drinks to the rest of Western Amazonia.

The construction of the flour mill in Manaus constituted a very high capital investment. Unlike most of the other consumer-processing industries, the flour mill is owned by a non-local company which also owns and operates a similar mill in Belém. A very modern, efficiently run plant, with a storage capacity for 6,000 tons of wheat, the local mill operates on a twenty-four hours a day basis. It grinds 150 tons of wheat a day, producing approximately 120 tons of flour.

A ship arrives every two weeks in Manaus with a new supply of wheat. According to the local manager, they prefer wheat from the United States, but the purchase of wheat is handled by the Banco do Brasil and the local mill has no control over the origin or type of wheat.[3] The majority of the wheat comes from Argentina with the United States supplying a small percentage. Before the mill began operating in Manaus, five years ago, flour was imported from São Paulo. Now the local mill supplies all of Western Amazonia with flour.

The other consumer-oriented industries, as Table 8 illustrates, tend to be small concerns. Some provide only rudimentary processing, such as the grinding and bagging of

coffee, or simple packaging, as in the case of salt and sugar which is repackaged locally into small consumer-sized sacks. Included under "Miscellaneous Food Processors" are: the bagging of sugar; ice cream making; a single sausage maker, and several producers of candy.

There are twenty-five furniture manufacturers in Manaus, but only two employ more than ten workers. The others are primarily family operations making tables and chairs, and bedroom furniture. Much of the local manufacturing, including furniture, hammocks, mattresses, brooms, shoes, candles, and soap, is designed to fit the needs of the lower economic class which cannot afford to buy similar, but generally better quality and considerably more expensive items imported from elsewhere in Brazil.

Raw Material-Processing Industries

Since it was first successfully acclimatized in Amazonia by a Japanese colonist in 1934, jute has assumed an increasingly important position in the economies of Amazonas and Pará. In 1947, the total production in Amazonia was only 6,287 tons, with 60 per cent coming from Amazonas and 40 per cent from Pará. Jute production reached a peak in 1960, with a total production of 50,828 tons; 70 per cent came from Amazonas and 30 per cent from Pará.[4] Since then, production has declined to an estimated 40,000 tons in 1968, with the proportion originating in each state

remaining about the same.[5] An insignificant rise in the selling price of jute, for the producer, during an inflationary period of rapidly rising prices is generally blamed for the decrease in production.

Jute cultivation in Amazonia is a widespread, small-scale operation. The average amount of land planted to jute, by each of the estimated 8,000 agriculturalists raising the fiber, is between two and three hectares. The small scale of production coupled with the complete absence of any form of mechanization results in a relatively high cost of production for Amazonian jute. Production costs in Amazonia, which is producing less than 2 per cent of the world supply of jute, are estimated to be 74 per cent higher than in Pakistan--one of the leading world producers.[6]

Amazonian jute is grown in the lowland areas subject to periodic inundation. The planting of the crop is timed so the harvesting season will coincide with the rising flood waters of the river. After the land is cleared and planted, a growing cycle of approximately 120 days is required for the crop to reach maturity when it stands about three meters high. After cutting, the jute is tied into bundles and carried to water where it must be submerged from fifteen to twenty-five days until maceration is completed. At that time the bundles are taken from the water, and the outer layer is removed from each stalk. This layer, which constitutes the jute fiber, is then thoroughly washed by beating

it in the water. The final washing removes any of the remaining bark-like outer covering and remnants of the mud used to keep the bundles submerged. The jute fibers are then strung on racks to dry, which takes about three days. Afterwards they are tied into small bundles and sold.

The average yield in Amazonia is about 1,500 kilograms of dried jute per hectare. From the time the jute is submerged for maceration until it is dried and bundled, weeks later, the cultivator spends most of his working days in the water.[7] Jute cultivation, as it is presently practiced in Amazonia, is an unpleasant, laborious process which results in a very minimal monetary return. Only the lack of viable alternatives keeps the local farmers raising jute.

When the bundles of jute arrive at the mills they are separated, classified, and baled. The bales stack easily for storage and occupy much less room than the loose bundles of jute. The mill equipment is imported from Ireland and almost the entire process from bale to sack is automated. The jute arrives by truck and is unloaded, classified, baled, stacked, opened, cleaned, flattened, compressed, combed, twice recompressed, spun into cord, rewound on large rollers, woven into material, inspected, ironed, cut into strips, sewn into sacks, printed with a label, bundled, and stored for shipping.

One of the first of the new industries to be

established in Manaus was a jute factory. Construction on the first plant, which is owned by a company from southern Brazil, began in 1951, and production started in 1954. Manaus now has five jute mills and one jute press. Five of the six are owned by local industrialists. The smallest mill employs eighty-seven workers and the largest has eight hundred and eighty employees. The large mills operate on a twenty-four hours a day, six days a week, year round basis. Although jute is only harvested between March and August, the local mills buy and stockpile enough to last until the next harvest.

Several of the smaller communities located in the Lower Amazonas area have jute presses where the small bundles of local jute are opened, classified, sorted, and pressed into two hundred kilogram bales. These bales are either sent to the jute mills in Manaus and Belém or exported to southern Brazil and Argentina. The bulk jute exported to Argentina is primarily the short fiber variety used for making sandals and brushes. The long fiber jute is woven into sack material.

In 1968, 60 per cent of Amazonian jute was processed within the region.[8] With new plants under construction in Parintins and Santarém, the percentage of regionally processed jute will continue to increase. Jute and jute products accounted for 37 per cent, by value, of regional exports from the state of Amazonas in 1967. They constituted

25 per cent of the state's total export value that year, even when refined petroleum products were included. In terms of both its contribution to the export market and its importance as the major employer in Manaus, jute is the single most important product in the Amazonas economy.

The numerous igarapés which dissect Manaus provide natural locations for the city's fifteen sawmills. Logwood arriving from the interior can be floated right to the sawmills, which are advantageously located to market their products locally or export them. Logwood comes to the Manaus sawmills from throughout Western Amazonia; sometimes it takes two or three months to complete the journey. A large percentage of the sawed wood is destined for the local market or for marketing within the state. Large timbers and short, standardized sizes of hardwoods for floors, which are available in white, yellow, dark brown and a reddish-purple wood, are important export items.

The sawmills located in Manaus vary considerably in size and complexity. Three of the fifteen employ six workers or less. Six of the mills each employs forty or more workers, and the largest company has two hundred employees. As a source of employment for the urban population of Manaus, the fifteen sawmills are a distant second to the jute mills.

The local plywood factory began production in 1961. The factory is located on the banks of the Rio Negro near

the outer perimeter of the city. Logwood, from which the plywood is fabricated, is floated from the interior directly to the plant. In 1968, their entire production of first grade plywood was being exported to Great Britain. Normally a portion of their output is sold in southern Brazil. Much of the plywood sold in Brazil is specially produced with alternating sections of light and dark wood; it is widely used for making furniture. The plant employed 508 people and was operating on a twenty-four hours a day, five days a week schedule in 1968. Originally owned and operated by the I. B. Sabbá concern, which also owns a jute mill, the local oil refinery, and numerous other enterprises in the city and state, the factory was purchased in 1968 by a large plywood company from southern Brazil.

Although rubber no longer dominates the economy of Amazonas, it continues to be a significant regional export. In 1967, rubber accounted for 21 per cent of the total export value of regional products and 15 per cent of the state's total exports. Five plants in Manaus process the rubber arriving from the interior before it is exported. One of these is a small, six-man operation; the other four each employs between fifty-five and eighty-five workers.

Most of the rubber arriving in Manaus comes shaped into black balls, some weighing as much as fifty kilograms. At the plant these balls are first cut in half and then into sections. The different layers within the sections are

separated and classified according to the quality of the rubber, and each type is then stacked into separate piles. Processing primarily consists of cutting the sections into smaller pieces and repeatedly running these pieces through machines which eventually flattens the rubber into very thin sheets while it is being washed and cooled by a continuous flow of water. The small sheets are then overlapped to form strips about three meters long and one meter wide. These strips are washed several times and hung on racks to dry; afterwards they are moved into large ovens where the remaining moisture is baked out. The dried strips are compressed into seventy-kilogram bales, wrapped in burlap, labeled, and stored for shipping.

A minor portion of natural rubber arrives in Manaus in liquid form. Instead of smoking the rubber and forming it into balls, some of the seringueiros pour it into containers, add a small amount of anticoagulant, such as ammonia, and eventually ship it in liquid form to the plants. At the plants the latex, which resembles fresh milk, is transferred into a large tank and finally tightly sealed in twenty-liter containers. These containers are shipped to southern Brazil and to foreign markets where the liquid rubber, which is the best quality and the most expensive, is used to make such things as rubber gloves. In contrast to the jute mills which are heavily automated, the processing

of rubber is basically a manual activity requiring repeated handling by the workers.

The local processing of Brazil nuts, sorva, and piaçaba amounts to little more than sorting these products and preparing them for export. In the case of Brazil nuts, less than 7 per cent of those exported in 1967 were shelled before exporting. The other 93 per cent were graded on conveyor belts where the obviously worthless nuts were removed and the rest were either sacked or exported in bulk. Sorva, a vegetable gum used as a base for chewing gum, receives little in the way of processing before it is exported. Piaçaba, a tree fiber, arrives in Manaus in long, conical shaped bundles. Processing consists of separating the fibers into two groups, depending on whether they are long or short fibers. These are then rebundled into bales and exported to Portugal and southern Brazil. The short fiber piaçaba is used to make stiff bristle brushes and the longer fibers are used for making brooms.

Wild animal skins accounted for almost 10 per cent of the value of regional exports in 1967 and five of the city's seven tanneries are involved in preparing and exporting those animal skins. The other two, which are one- and two-man operations, process sheep and cattle hides. The largest tannery employs 135 workers and confines its activities exclusively to handling wild animal skins. As yet, there are no integrated leather industries in Manaus using animal

skins to manufacture leather goods for local tourists or for export. There are several small scale producers of sandals and inexpensive shoes from locally processed leather, but it is not a high quality production. It is quite likely that the availability of the raw material, the local abundance of inexpensive labor, and the recently created Zona Franca will attract leather good manufacturers to Manaus at some future date.

The Petroleum Industry

In a country where the national government maintains a strict monopoly on the petroleum industry, the Manaus refinery is obviously somewhat of an anomaly. In 1953, a federal agency, PETROBRAS (Petróleo Brasileiro S.A.), was created for the purpose of developing the national petroleum industry as a state monopoly. The agency controls oil prospecting, the refining of all petroleum, the importation and distribution of all crude oil and derivatives, and fluvial and pipeline transportation of all crude oil and derivatives. Six private oil refineries still exist in Brazil, in addition to the five newer and larger Petrobras refineries. The private refineries were either in operation when Petrobras was created in 1953, or, as in the case of the Manaus refinery, permission to build them had already been granted by the National Petroleum Council (Conselho Nacional de Petróleo) before the law went into effect.[9]

The private refineries are prohibited from increasing their production capacity without the permission of the Conselho Nacional de Petróleo, which is reluctant to permit any further private expansion in the petroleum industry. These six companies account for a very small percentage of the national production and their relative importance continues to decline as Petrobras opens new refineries. Of the eleven refineries operating in Brazil in 1968, Manaus ranked ninth in production. The combined capacity of the five Petrobras refineries was 401,000 barrels of crude oil per day in 1968, compared to a combined daily capacity of 58,300 barrels a day for the private refineries.[10]

When the Manaus refinery began production in 1956, it was limited to processing 5,000 barrels of crude oil a day. Although local production is relatively insignificant nationally, it is one of the most important industries within the region.

When the refinery began production, Peru and Venezuela were supplying the crude oil. In 1967, Nigeria was the source of 52.4 per cent of the imported crude oil; Venezuela contributed 27.6 per cent, and Peru accounted for 20 per cent.[11] The local refinery has no control over its source of crude oil. Petrobras has complete responsibility for the purchase and transportation of crude oil and it insures that a steady supply continues to arrive at the refinery.

TABLE 9

PRODUCTION FIGURES FOR THE MANAUS REFINERY--1967

Item	Liters	Percentage
Gasoline	90,629,604	34.6
Kerosene	29,303,854	11.2
Diesel Oil	100,276,576	38.3
Fuel Oil	35,671,149	13.6
Bottled Gas	6,029,007	2.3
Total	261,910,190	100.0

Source: Companhia de Petróleo da Amazonia, Manaus (unpublished data provided by the company, Sept., 1968).

The rapid increase in motor vehicles in Amazonia has increased demands on the Manaus refinery, particularly for diesel oil and gasoline. In 1956, the year the refinery began operations, Manaus boasted a total of 1,489 vehicles; there were 736 automobiles, 367 trucks, 109 pickups, and 105 jeeps. The remaining 172 vehicles included streetcars, tractors, and just about anything that had wheels.[12] By 1965, the number of motor vehicles in Manaus had increased to 4,648. Automobiles numbered 2,890, trucks 759, buses 249, pickups 135, and motorcycles 537. The other 78 vehicles included ambulances and tank trucks, but not tractors.[13] A similar increase occurred in Belém which

listed 1,115 automobiles and 359 buses in 1956.[14] In 1967, the city had 5,081 automobiles, 532 buses, and 1,344 trucks.[15] After repeated requests to increase local production in order to keep pace with increasing regional consumption, the Conselho Nacional de Petróleo authorized the Manaus refinery to increase its daily production capacity to 7,000 barrels a day, starting in September, 1968.

A completely separate company, which is also owned by I. B. Sabbá, is responsible for the sale and distribution of the locally refined products, with the exception of bottled gas which is distributed by another company. As Table 10 illustrates, Belém is the single most important market for the gasoline, kerosene, and diesel oil produced in Manaus. The figures for Manaus include petroleum products distributed throughout the state. The I. B. Sabbá company does not have storage facilities in Roraima, primarily because barges cannot navigate the Rio Branco to the city of Boa Vista. Exports to Roraima, by the barrel, also come from the Manaus distribution center and are included in those figures.

Foreign technicians, primarily Americans, were brought to Manaus to oversee the assembling of the refinery and to operate it initially while they trained local crews as their replacements. By 1960, the operation was completely under the control of local technicians. At present the

TABLE 10

DISTRIBUTION OF PETROLEUM PRODUCTS FROM THE MANAUS REFINERY--1967
(Percentage of Total Sales)

Destination	Gasoline	Kerosene	Diesel Oil	Fuel Oil	Bottled Gas
Manaus	33.89	34.83	29.59	100.00	100.00
Acre	0.90	0.88	1.35	--	--
Rondonia	6.20	3.71	7.78	--	--
Santarém	4.73	4.60	5.67	--	--
Amapá	1.39	--	3.16	--	--
Belém	42.58	47.04	43.99	--	--
São Luis	3.45	5.07	3.27	--	--
Fortaleza	6.85	3.87	5.19	--	--
Total	100.00	100.00	100.00	100.00	100.00

Source: Companhia de Petróleo da Amazonia (unpublished data provided by that company, Sept., 1968).

refinery employs 241 men who keep it operating on a continuous schedule.

After the refinery began functioning, the local production and guaranteed supply reduced the regional price of diesel oil by 50 per cent. As a result, the electric plants in Belém and Manaus, which were both still dependent upon wood-burning steam generators, were converted to modern thermoelectric plants. Diesel motors also quickly replaced the old steam engines as a source of power for regional shipping. Wood-burning ships, which were common in Amazonia in the 1950's, are a rarity today.

Bottle gas has largely replaced charcoal as a cooking fuel in the homes of Manaus. In 1966, 78.8 per cent of the homes in the city were reported to be using gas stoves.[16] The company which distributes bottled gas in Manaus is also supplying the rest of Western Amazonia. The local refinery is only able to supply 80 per cent of the regional demand, so the other 20 per cent is imported from the Matari Refinery in Bahia. In October, 1968, the local company announced the initiation of a major expansion in their storage capacity for bottled gas in order to keep pace with the continuously increasing demand.[17]

New Industrial Developments

Industrial activity in Manaus, even though it is still in the embryonic stage, is approaching the point where

spin-off development is starting to emerge from existing industries. Some production of tourist souvenirs from locally processed jute is presently taking place in the city on a very small scale. The inauguration of a feed plant in August, 1968, is a more appropriate example of the "spin-off effect." The local flour mill constructed a subsidiary plant to produce mixed feed for chickens, cattle, and pigs. Formerly unused by-products from the mill are now being used by the new industry. The new plant is also encouraging and supporting an increase in the local production of corn, one of the main ingredients in these animal feeds. Prior to August, all prepared animal feed, primarily chicken feed, was being imported from São Paulo. Local production of the same products is now providing employment in the mill and on the farms, and is insuring a regular supply of previously imported feed at a cheaper price.

The most impressive new industrial enterprise presently being developed in the Manaus area is the steel mill under construction on a bluff overlooking the juncture of the Rio Negro and Rio Amazonas. The site of the new mill affords a spectacular view of the "meeting of the waters" and would seem more appropriate for a tourist hotel; instead, it will soon be accommodating several blast furnaces. The company goes by the acronym SIDERAMA (Companhia Siderúrgica da Amazonia) and is the brainchild of a local industrialist, Sr. Socrates Bomfim.

Construction work is well advanced on the plant and it is scheduled to begin limited production by the end of 1969, with the entire complex being completed by 1972. Initial plant capacity will be 25,000 tons per year with long range plans of eventually expanding production to 100,000 tons. As steel mills go, the Manaus plant will be small and its output will be primarily designed to satisfy regional demands. Initially it will be producing reinforcing rods, light beams for construction, and wire which can be used to manufacture nails. The principal market area will consist of all northern Brazil and include parts of the Northeast.[18]

All raw materials needed to operate the plant will be coming from the Amazon Valley. A relatively high grade iron ore will come from the Rio Jatapu area north of Itacoatiara, and is expected to cost the equivalent of US$3.00 a ton delivered at the mill. Limestone will come from the vicinity of Monte Alegre, Pará, which is just east of Santarém, at a cost of US$4.00 a ton. Instead of importing coke, the plant will rely on charcoal produced from a local tree which is said to grow faster and produce more charcoal, per ton of wood, than Eucalyptus--which is used extensively in southern Brazil. The delivery price for a ton of charcoal is set at US$6.00, which compares favorably with the US$31.00 a ton being paid by steel

companies in southern Brazil for coke imported from the United States.[19]

The plant will maintain a six month supply of iron ore to insure continuous production during the three or four months a year when the upper reaches of the Rio Jatapu are too low for the ore barges to navigate. When it is fully operational, the plant is scheduled to employ 330 workers with another 300 employed in auxiliary services: supplying the charcoal and iron ore, and transporting them to the plant. Technicians experienced in operating a steel mill will be imported to start the plant operating and to train local people. Within three or four years, the company expects to be completely reliant upon local help.

Even though the steel mill will be a small scale operation, the man who conceived and organized the entire project is confident that it will not only be a financial success, but will be able to produce finished products cheaper than any other plant in the country. He bases this belief on the fact that: (1) their raw materials will be cheaper; (2) all transportation of raw materials and finished products will be by water--the cheapest form of transportation; (3) the entire plant will be new and production techniques will be the most modern and economical available; and (4) the company derived substantial benefits from the establishment of the Manaus Zona Franca. As a result of the Zona Franca, the company does not have to pay

any import tax on plant equipment, which helps reduce initial costs, and, more importantly, it will not have to pay any state or federal taxes on goods produced during the first ten years. The elimination of the state and federal taxes alone will provide an initial 25 per cent advantage in selling price.[20]

Even before the steel mill began production, the formation of a new company to build and operate a cement plant in Manaus was announced. The new plant will be an affiliate of the steel mill and will be located nearby in order to utilize heat from the blast furnaces in the cement-producing process. Preliminary plans call for producing 6,000 sacks a day with production to begin in late 1970. The city is presently importing most of its cement from Europe.

The I. B. Sabbá concern, which was in the forefront of industrial activity in Manaus even before it built the refinery, has formed a new company to develop a petrochemical industry in Manaus. The company planned to start construction in 1969 on a small petrochemical plant estimated to cost US$5 million. After the first plant is producing, a second and considerably larger facility will be built to complement it.[21] When it is operational, the petrochemical complex will offer another example of the multiplying or "spin-off" effect of industrial development in Manaus.

The ideal combination of an obvious need together with financial support and tax incentives is attracting a modern shipyard to Manaus. Brazil's entire merchant fleet is evidently in a deplorable condition and the federal government and the Merchant Marine Commission (Comissão de Marinha Mercante) has placed considerable emphasis on substituting a modern fleet for what operates under that label at present. As a report published by SUDAM illustrates, the Amazonian fleet is in desperate need of renovation and replacement.[22] Consequently, SUDAM has agreed to provide part of the financial banking necessary to establish an industry to build for regional needs. The tax incentives provided by the new Zona Franca made Manaus the preferred site for the new industry instead of Belém.

Zona Franca--An Attempt to Stimulate Development

Originally created by Federal Law 3,173 issued on June 6, 1957, regulated by Decree 47,757 published December 2, 1960, and modified by Decree 51,114 which appeared August 2, 1961, the Zona Franca of Manaus amounted to nothing more than a tax free warehousing facility for merchandise passing through Manaus on its way to and from foreign countries.[23] Federal Decree-Law 288, published February 28, 1967, and subsequently regulated by Decree 61,244, which appeared August 28, 1967, completely restructured the earlier provisions and did, in fact,

provide for the establishment of an all inclusive Zona Franca in Manaus.[24]

The new Zona Franca is a 10,000 square kilometer zone of free commerce for imports and exports which includes the city of Manaus and surrounding area. In addition, special fiscal incentives were also incorporated into the new law which aimed

> . . . to create in the interior of Amazonia an industrial, commercial, and agricultural center endowed of economic conditions which will permit its development, in view of the local factors and the great distance that consumer centers are located from their products.[25]

To implement and administer the new laws, the Superintendency of the Manaus Free Zone, SUFRANA (Superintendência da Zona Franca de Manaus), was created. Administratively and financially autonomous, the new agency is linked to the Minister of the Interior.

Fiscal incentives authorized by the federal government include the exemption from import, export, and sales tax on most merchandise destined for or originating in the Zona Franca. Direct shipments of foreign and national merchandise entering the Zona Franca and destined for local consumption; any form of industrialization; the installation and operation of any type of industry or service; or warehousing prior to reexportation, are exempt from import taxes. Exceptions are imports of firearms and munitions, perfumes, tobacco products, alcoholic beverages, and passenger

automobiles. All goods produced in the free zone are exempt from the industrialized products taxes, which are normally added to the producer's selling price, whenever these goods are sold anywhere in Brazil. Merchandise exported from the Zona Franca to foreign countries, regardless of their origin, are excluded from paying the regular export tax. The law also provides for the exemption from federal sales tax of Brazilian goods destined to the free zone for consumption or industrialization. The tax incentives of the free zone legislation are scheduled to expire in thirty years unless extended by the federal government.[26]

The state of Amazonas also adopted special fiscal incentives for new industrial or agricultural enterprises willing to take advantage of the Zona Franca. All such undertakings considered to be of real importance to the regional economy, and which have a minimum capital investment of NCr$250,000 will be exempt from paying state sales tax on their products for the first ten years they are in operation.[27] At present this sales tax amounts to 15 per cent, which, when added to the federal 10 per cent exemption, provides Zona Franca industry with an attractive 25 per cent reduction in the initial selling price of their products.

The stimulation of economic development, primarily through industrialization, is the basic goal of the Zona Franca of Manaus. Attracting new industry, however, is a slow process which requires a detailed analysis of the

problems and prospects of production and marketing for each individual firm. Even after a decision is made to establish a new industry, a considerable time lag usually occurs before the plant actually can start production. From a realistic viewpoint, new industrialization in Manaus will have to be a long-range result of the creation of the Zona Franca.

The immediate, short-range reaction to the Zona Franca revived old memories of the boom days in Manaus. Commerce blossomed overnight. Merchants and goods poured into the city in a seemingly inexhaustible flow, flooding the local market with foreign-made fans, air conditioners, portable radios, stereo-phonographs, tape recorders, televisions, toys, cameras, electrical appliances, furniture, pickup trucks, motorcycles, clothing, food products, and a wide range of other goods and gadgets. New retail outlets, many of them fly-by-night operation, attracted by the possibilities of quick profits, opened all over the city. Established firms were equally quick to take advantage of the new import laws.

Shops full of Japanese, American, and European merchandise attracted tourists from southern Brazil who were eager to combine a sight-seeing trip to the jungles of Amazonia with a visit to a free port. As a memento of their journey, tourists were returning to southern Brazil carrying portable televisions, radios, tape recorders, and other similar items. The tourist trade continued unabated

throughout 1968, the first full year that the free zone was in effect, and the city witnessed the creation of a number of new commercial airline flights, a marked increase in cruise ship activity, and a continuing shortage of hotel accommodations, all of which contributed to a very significant increase in commercial activity. The importation of thousands of Japanese-made portable televisions into Manaus, which does not have a television station, was a source of continuing bad publicity in the southern press. The press also gave considerable attention to the contraband trade which expanded with the Zona Franca.

In a country ruled by decree, as Brazil is, laws can be quickly and easily modified or nullified. In Manaus' case, the increasing tourist trade in electrical appliances, together with the publicity over contraband and imported televisions had an adverse effect on the industrial concerns in southern Brazil which produce electrical appliances. They were able to use their influence to persuade the government to modify the Zona Franca regulations by issuing a ruling prohibiting imported electrical appliances from leaving the Zona Franca duty free. With the local market already saturated, the elimination of the tourist trade would, for all practical purposes, stop the importation of foreign electrical appliances.

The ruling went into effect in January, 1969, without any advance notification. The effect in Manaus was

almost catastrophic. Merchants and warehouses which were stocked with large inventories of imported appliances suddenly found themselves without a market. The influence of the new ruling was immediately felt in the city; commerce dropped 50 per cent, and reservations for transportation and hotel accommodations were reported down by 30 per cent.[28]

In a face-saving gesture, the government agreed to delay the final implementation of the ruling for six months, thereby giving local merchants an opportunity to reduce their inventories. Advocates of the new ruling argue that the influx of foreign-made appliances were contributing nothing to the industrialization and development of Amazonia, which was the motivation behind the creation of the Zona Franca, and that a curtailing of that aspect of the free zone will not impair the original objectives. For the industrialists and potential investors in the Zona Franca, even those who might concede the legitimacy of such an argument, the ruling still created doubts and considerable uneasiness. If the influential industrialists in the south, who saw their industries threatened by imports, can, in effect, eliminate the importation of electrical appliances now, what will keep them from using their influence to restrict other activities in the future?

NOTES

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24. Ibid.

25. "Decreto-Lei No. 288 de 28 de Fevereiro de 1967," Diário Oficial da União (Brasilia), 28 Feb., 1967, Art. 1. (Translated by this writer.)

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A SUB-REGIONAL CENTER LACKING AN URBAN HIERARCHY

Population

In areal extent Amazonia encompasses slightly more than three and a half million square kilometers, about 42 per cent of Brazil. The vastness of the area contrasts markedly with the paucity of inhabitants; the total regional population amounted to only 3.67 per cent of the national population in 1960.[1] Within the region, as Table 11 illustrates, the population is concentrated primarily in Pará and secondarily in Amazonas. The remainder of Amazonia, with the exception of capital cities, is virtually uninhabited. Belém and Manaus provide hypertrophic examples of urbanism in a sparsely settled surrounding. Between them they contained 19.7 per cent of the regional population in 1960. Individually they tower above every other city in Amazonia; together they dominate life, in all its aspects, in the region.

Pará accounted for almost 60 per cent of the total population of Amazonia in 1960. Within the state 40 per cent of the inhabitants resided in urban centers. In a distribution of urban centers, Belém, with 359,988 inhabitants, stood alone as the major urban concentration in the state; the second largest city contained only 25,000

TABLE 11

POPULATION OF AMAZONIA--1960

Political Unit	Total Population	Percentage of Regional Population	Population in Capital City	Percentage of Population in Capital City	Percentage of Urban Population
Pará	1,550,935	59.6	359,988	23.21	40.66
Amazonas	721,215	27.7	154,276	21.39	33.23
Acre	160,208	6.2	17,245	10.76	21.22
Rondonia	70,783	2.7	19,387	27.38	43.57
Amapá	68,889	2.7	27,585	40.04	51.57
Roraima	29,489	1.1	10.180	34.52	43.12
Total	2,601,519	100.0	588,661	22.66	37.41

Source: Anuário Estatística do Brasil, 1968 (Rio de Janeiro: Instituto Brasileiro de Estatística, 1968), p. 39; Brasil: Sinopse Preliminar do Censo Demográfico--1960 (Rio de Janeiro: Serviço Nacional de Recenseamento, 1962), p. 5; Subsídios à Regionalização (Rio de Janeiro: Instituto Brasileiro de Geografia, 1968), p. 41.

people. In grouping these urban centers, only four cities fell in the 10,000 to 25,000 range; eight in the 5,000 to 10,000 class; and twelve in the 2,500 to 5,000 group. See Table 12. The state also exhibits a decided concentration of population along the coast.

The state of Amazonas experienced a 40 per cent increase in population between 1950 and 1960;[2] but, its 721,215 inhabitants constituted less than 28 per cent of the regional total in 1960. In relation to the other urban centers in the state, the capital city was completely disproportionate in size. Manaus contained 154,276 inhabitants while the second largest city had only 9,068. In number and size the other urban centers in the state were insignificant. There were only three cities in the 5,000 to 10,000 range and six in the 2,500 to 5,000 grouping. See Table 12.

This pattern becomes even more accentuated when the remainder of the region is examined. Rondonia had a 91 per cent population increase between 1950 and 1960;[3] but, its total population was only 70,783 inhabitants in 1960, with almost 20,000 of these in Pôrto Velho, the capital. In comparison, the population of the neighboring state of Acre grew only 39 per cent in the same ten-year period.[4] Although Acre has the third largest regional population, 79 per cent of its inhabitants were classified as rural--the highest rural concentration in the region. Amapá and

TABLE 12

URBAN CENTERS IN AMAZONIA EXCEEDING 2,500--1960

PARÁ	
Belém	359,988
10,000-25,000	
Santarém	24,924
Bragança	12,848
Icoraci	11,512
Abaetetuba	11,196
5,000-10,000	
Capanema	9.678
Castanhal	9,528
Marabá	8,533
Vigia	7,246
Alenquer	7,027
Soure	6,666
Óbidos	5,901
Cametá	5,695
2,500-5,000	
Igarapé-Açu	4,195
Salinopolis	4,101
Oriximina	3,974
Monte Alegre	3,911
Maracanã	3,903
Curuçá	3,871
Santa Isabel do Pará	3,769
Maraparim	3,542
Tucurui	3,403
Altamira	2,939
Igarapé-Miri	2,591
Cachoeira do Arari	2,532
AMAZONAS	
Manaus	154,276
5,000-10,000	
Parintins	9,068
Itacoatiara	8,818
Coari	5,908
2,500-5,000	
Maués	4,161
Benjamin Constant	3,224
Eirunepé	3,023
Boca do Acre	2,994
Tefé	2,781
Manacapuru	2,548
RONDONIA	
Pôrto Velho	19,387
Guajará-Mirim	7,115
ACRE	
Rio Branco	17,245
Cruzeiro do Sul	4,807
AMAPÁ	
Macapá	27,585
RORAIMA	
Boa Vista	10,180

Source: Brasil: Sinopse Preliminar do Censo Demográfico, 1960 (Rio de Janeiro: Serviço Nacional de Recenseamento, 1962), pp. 21-30.

Roraima both experienced large percentage increases in their respective populations between 1950 and 1960, but their absolute totals remained minuscule. These two territories also had a high concentration of their total population living in the capital city.

Settlement Functions

Settlement characteristics in Amazonia reflect the region's dependence upon a colonial economy and its physical and cultural isolation from the rest of Brazil. The dominant influence in Amazonia is the river--whether it is one of the many tributaries or the Rio Amazonas itself. For most of the inhabitants the river is the only connection to the outside world. The prevailing settlement type found along these rivers is still that of the subsistence agriculturalist. Any income the inhabitants acquire usually results from the collecting and selling of marketable forest products, or, if they live in Lower Amazonia, from the cultivation of jute. The region's atrophic hierarchy of urban centers, as shown in Table 12, is one result of this continuing reliance upon a colonial economy. Urban centers that have developed within Amazonia can be broadly grouped into one of four different categories: (1) regional centers, (2) capital cities, (3) minor centers of distribution and collecting, and (4) cities with specialized functions.

Belém and Manaus are the undisputed regional capitals

of Amazonia. Belém was the seventh largest city in Brazil in 1960 and was without question the dominant metropolis in the entire region. Its location at the mouth of the Amazonas has historically made it the major import-export center of Amazonia. The increasing flow of goods arriving and departing via the recently completed Belém-Brasilia highway is reinforcing Belém's dominant position.

The rubber boom established Manaus as the commercial center for the upper Amazon. As an inland seaport capable of handling large ocean-going vessels, the city has traditionally been the central collecting point for Amazonian products: rubber, Brazil nuts, jute, wood, rosewood oil, dried fish, and animal skins. Equally important is the city's corresponding role as a wholesale and retail center for the interior region; it exports almost everything the area produces and imports almost everything it consumes. The recent introduction of industry is modifying the city's economy and reinforcing its position as a regional center.

The second group of cities, both in size and importance, are the administrative centers for the state of Acre and the federal territories: Rio Branco, Macapá, Pôrto Velho, and Boa Vista. Without the capital city designation and the concomitant government activity, though limited it may be, there would be little distinction between this category and the following one.

The remainder of the urban centers, with a few minor

exceptions, function as collecting centers for regional products which are then shipped on to Manaus or Belém. In turn, these small centers are the final distribution point for goods arriving from the two regional centers. Many of these small communities originated as trading posts established by commercial houses based in Manaus and Belém. These centers usually occupy favorable locations at the first waterfall (cachoeira) which restricts navigation in the tributary rivers or near the confluence of the tributary and the Rio Amazonas. Well suited as collecting and distributing centers, a favorable location is their main asset and largely responsible for their continued existence in the post-rubber-boom period.

The few minor exceptions to the above, urban centers with a specialized function, are basically of two types. Macapá is a good example of the first of these. Although it is a territorial capital, its major economic function is as a specialized port for the exporting of manganese ore. The second type is characterized by Benjamin Constant, Japurá, and Oiapoque--all border towns. They provide port of entry and customs services while maintaining Brazil's presence on many of its remote frontiers.

Using 1940 and 1950 Census data, Michel Rochefort published a study of the urban organization of Western Amazonia in the 1950's. In his study Rochefort characterized the region as an "example of an urban network in a

subdeveloped 'interior' region."[5] His description of such an urban network closely coincides with the "colonial economy" concept. As he described this network:

> a large city assures communication with the exterior world, thanks to modern means of transportation; a series of modest local centers, more or less hierarchied, take charge of draining the region's raw wealth to this city, which partially transforms it, before shipping it to the developed regions of Brazil or to the industrial nations.[6]

In 1950, according to Rochefort's study, the region had a single metropolis--Manaus. Directly below Manaus were five centers of second order importance; three of these were territorial capitals. He also designated seven third order centers and a number of elementary centers whose influence was restricted to their respective município.[7]

In 1963, Pedro Pinchas Geiger published Evolução do rêde urbana brasileiro.[8] It was an attempt to view the urban network of Brazil in national perspective. Based on 1950 Census data, Geiger established a five-category classification of urban centers: (1) Regional and National Metropolis; (2) Regional Sub-Metropolis; (3) Regional Capital; (4) First category centers; and (5) Second category centers.

Belém was designated as one of six regional and national metropolises in the Brazilian urban network. Within the region of Belém's urban influence, Geiger labeled Manaus as a regional capital--leaving the second category, regional sub-metropolis, vacant. Four cities were

classified as first category centers: Santarém, Macapá, Pôrto Velho and Rio Branco. Three of the four are regional capital cities. Eleven cities were included in the final grouping as second category centers: Guajará-Mirim, Cruzeiro do Sul, Boa Vista, Itaccatiara, Parintins, Óbidos, Alencar, Castanhal, Marabá, Carolina and Soure.[9] The frailty of the Amazonia urban network is underscored by the fact that only five urban centers in the network are located in the vast region west of Manaus. See Figure 11.

In a valuable work published late in 1968, Subsídios À Regionalização,[10] the Brazilian Institute of Geography (Instituto Brasileiro de Geografia) appears to have considerably refined Geiger's original urban network. The improvements are the result of a special study on urban centers and urban hierarchies in Brazil. Using two main categories and numerous sub-categories, the study attempted to evaluate the principal urban centers in Brazil. The two categories were: (1) the functional equipment possessed by each center for the distribution of goods and services--including such things as administrative, financial, health and educational services, and divulgence capabilities (radio, newspapers); and (2) the area of influence of each city as measured by its distribution of industrial products and services. In the evaluation, each city was rated on a standard scale and assigned a point value for each of the

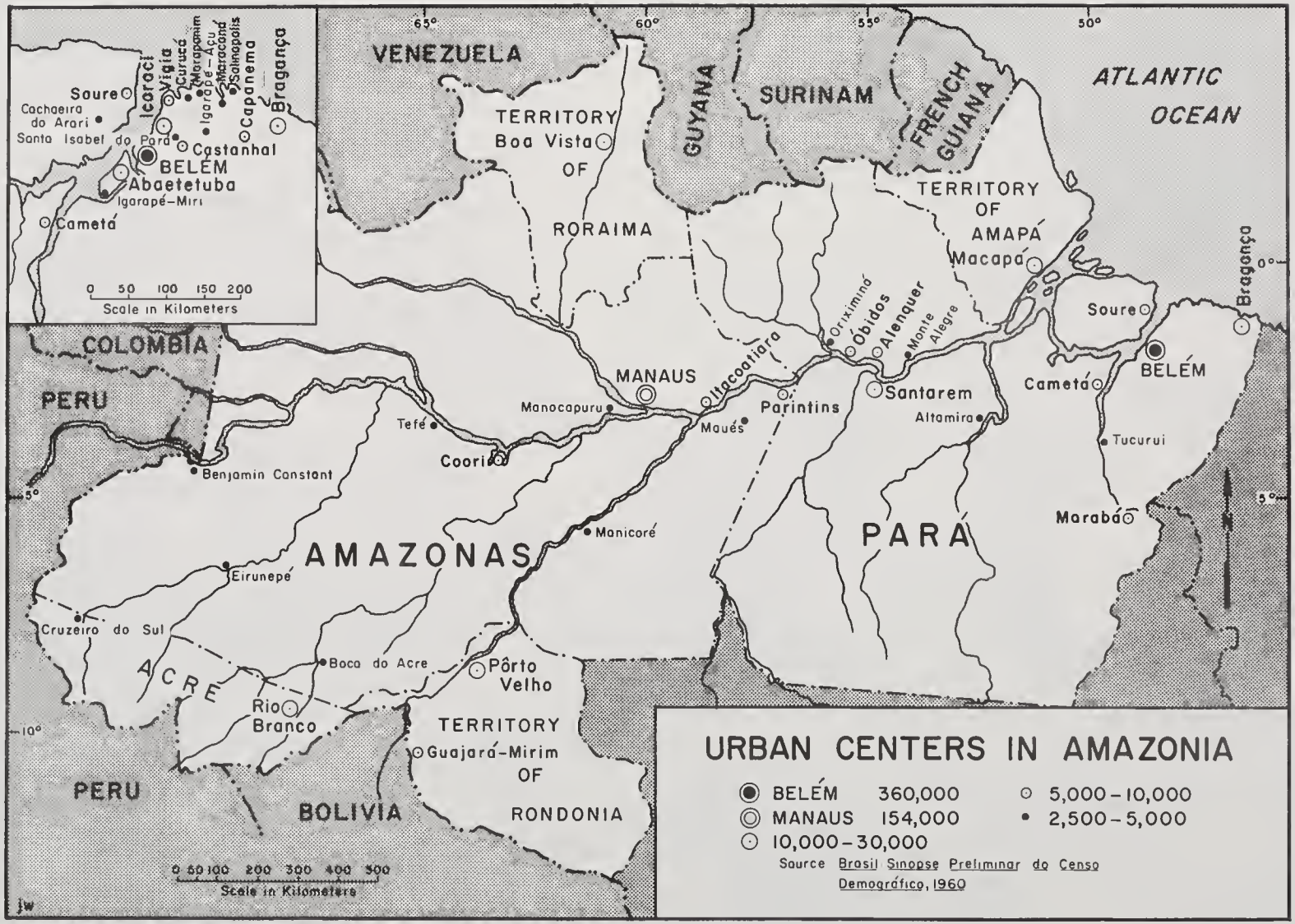
VENEZUELA
GUYANA
SURINAM
FRENCH GUIANA
ATLANTIC OCEAN
TERRITORY OF RORAIMA
Boa Vista
TERRITORY OF AMAPÁ
Macapá
COLOMBIA
PERU
BOLIVIA
MANAUS
Manacapuru
Tefé
Coari
Benjamin Constant
Eirunepé
Cruzeiro do Sul
Manicoré
AMAZONAS
ACRE
Rio Branco
Boca do Acre
Pôrto Velho
TERRITORY OF RONDONIA
Guajará-Mirim
Itacoatiara
Parintins
Maués
Óbidos
Oriximiná
Alenquer
Monte Alegre
Santarem
Altamira
PARÁ
Soure
Cametá
BELÉM
Tucurui
Marabá
Bragança
Icoraci
Vigia
Curuçá
Maracanã
Salinapolis
Capanema
Cachoeira do Arari
Santa Isabel do Pará
Castanhal
Abaetetuba
Igarapé-Miri
0 50 100 150 200
Scale in Kilometers
0 50 100 200 300 400 500
Scale in Kilometers
65°
60°
55°
50°
5°
0°
10°
jw
URBAN CENTERS IN AMAZONIA
BELÉM 360,000
MANAUS 154,000
10,000-30,000
5,000-10,000
2,500-5,000
Source Brasil Sinopse Preliminar do Censo Demográfico, 1960

Figure 11

sub-categories. Based on their total points, the urban centers were grouped in one of nine categories.[11]

The classification of Brazilian cities that emerged from this study included: (1) national metropolis--2; (2) equipped regional metropolis--3; (3) sub-equipped regional metropolis--4; (4) super-equipped second order centers--21; (5) equipped second order centers--18; (6) sub-equipped second order centers--36; (7) important centers--irregularly equipped--33; and (8) two categories of third order centers--89.[12]

The study reconfirmed earlier reports showing an almost total concentration of the distribution of goods and services within Amazonia in the two cities of Belém, a sub-equipped regional metropolis, and Manaus, a super-equipped second order center. In the next level of urban centers below Manaus are three important centers irregularly equipped: Santarém, Pôrto Velho, and Macapá. Following them are a number of badly equipped small cities and agglomerates--incapable of carrying out a role as intermediate centers.[13] See Figure 12. The lack of urban centers equipped to function as intermediaries between the two large centers and the different regional sectors of Amazonia prompted the region to be characterized as "possessing a disorganized urban network, without a hierarchy."[14]

The existing urban network results from the nature

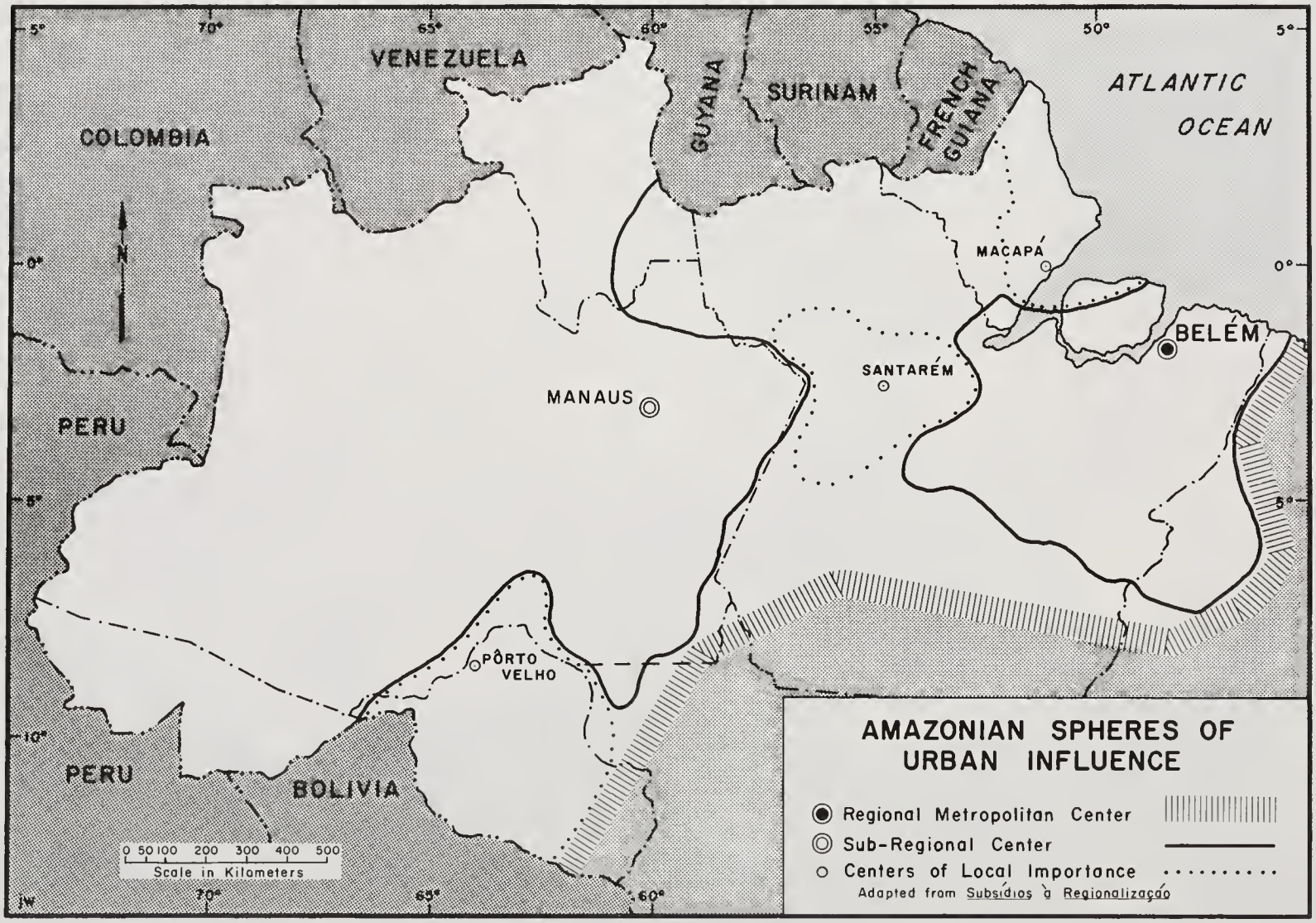
VENEZUELA
COLOMBIA
GUYANA
SURINAM
FRENCH GUIANA
ATLANTIC OCEAN
MACAPÁ
BELÉM
SANTARÉM
MANAUS
PERU
PÔRTO VELHO
PERU
BOLIVIA
N
0 50 100 200 300 400 500
Scale in Kilometers
AMAZONIAN SPHERES OF URBAN INFLUENCE
Regional Metropolitan Center
Sub-Regional Center
Centers of Local Importance
Adapted from Subsídios à Regionalização

Figure 12

of the region's economy and the almost absolute dependence on a fluvial transportation system. The location of the region's well-equipped urban centers and those with meaningful equipment can be summarized as:

> along the principal axis of circulation, the Rio Amazonas, where one can locate Belém, regional port of entry, Santarém, and Manaus, in the confluence of other routes of fluvial navigation, and on the periphery of the region where, with the exception of Guajará-Mirim, the others exercise important political-administrative functions, functions which also contributed to reinforcing the equipment of Belém and Manaus.[15]

The three major urban centers located on the Rio Amazonas linear axis are progressively smaller in size as their distance from the mouth of the river increases. Belém, with 359,988 (1960) inhabitants, is the primary urban center in the region; Manaus, 154,276, is the secondary regional center, and there are some indications that Iquitos, Peru, 58,000,[16] whose influence extends into the Brazilian upper Amazon, should occupy a position second only to Manaus among the urban centers located on this particular linear axis. If the administrative centers of Pôrto Velho and Rio Branco are excluded, a similar linear axis can be plotted for the principal tributary rivers. The linear distribution of urban settlements along these tributaries generally exhibits similarities to the primary linear axis, with the largest center at or near the mouth of the respective rivers and a smaller center near the uppermost limit of fluvial navigation.

The first significant development in Amazonia was based on the exploitation of a widespread forest resource--natural rubber. The general distribution of urban centers in Amazonia today is a legacy from that earlier attempt to develop a new "resource frontier."[17] Although rubber production and the collection of forest products has since declined in importance, substitutes have been slow in developing, especially in Western Amazonia. The only notable exceptions are jute cultivation in the Lower Amazonas area and cassiterite mining in parts of Rondonia. In essence, the interior communities of Amazonia are still on a resource frontier, but one which has dwindled in economic importance.

Although Amazonia may be somewhat unique geographically, its pattern of economic development and subsequent urban characteristics is typical in resource frontiers.

> Because of their relative isolation, cities on the resource frontier perform only limited central-place functions. Relative to their size, their trade and service sectors are generally atrophied. Hence, these cities do not form part of the national system of central places which is based on a hierarchy of service functions. They are instead highly specialized cities whose chief purpose is to support and maintain the primary resource activities in the area. The hinterland or service areas of resource frontier cities will, as a rule, be small, with city growth chiefly dependent on the behavior of the demand function for the products exported from the region.[18]

At the regional level, a center-periphery model of Western Amazonia today would locate Manaus at the center of

the model with the remainder of the region on its periphery. The colonial relationship, which describes this model, is clearly the best description of the present economic situation in the region. In addition to the raw materials arriving from the interior for processing and/or exporting, the city is also the recipient of labor, entrepreneurship, and capital from the interior. At the national level, the same model can be used to explain the relationship between Amazonia and industrialized Brazil. Only at that level Amazonia is the peripheral area exporting its raw materials, labor, and capital to the south.

Development of the interior of this enormous region, which would modify the existing linear axis settlement patterns and encourage the growth of a true urban network, can only come with improved transportation facilities and a better utilization of existing resources. As long as the interior inhabitants of Amazonia are dependent upon collecting forest products for their livelihood and the river system for their transportation, it is unlikely that the area will soon advance above the resource frontier stage of economic development.

NOTES

1. Anuário Estatística do Brasil, 1968 (Rio de Janeiro: Instituto Brasileiro de Estatística, 1968), pp. 18-39.
2. Ibid., p. 39.
3. Ibid.
4. Ibid.
5. Michel Rochefort, "A Organização urbana da Amazonia Brasileira," Boletim Carioca de Geografia, XII (1959), 15.
6. Ibid., p. 29.
7. Ibid., p. 23.
8. Pedro Pinchas Geiger, Evolução da rêde urbana brasileiro (Rio de Janeiro: Centro Brasileiro de Pesquisas Educacionais, 1963).
9. Ibid., p. 412.
10. Subsídios à Regionalização (Rio de Janeiro: Instituto Brasileiro de Geografia, 1968).
11. Ibid., pp. 179-80.
12. Ibid., p. 186.
13. Ibid.
14. Ibid.
15. Ibid., p. 181.
16. América en Cifras 1967: Situación Demográfica (Washington, D.C.: Union Panamericana, 1968), p. 41.
17. For a description of "resource frontier, as it is used here, see John Freidmann, Regional Development Policy: A Case Study of Venezuela (Cambridge: The M.I.T. Press, 1966), pp. 76-86.
18. Ibid., p. 79.
19. Ibid., pp. 10-13.

THE CITY IN REGIONAL PERSPECTIVE

> The Amazonian region, even though it may be the most extensive, from the economic viewpoint does not possess great national significance. So much so that the Amazonian area can be considered an underdeveloped area dependent upon Southern Brazil. The totality of its natural resources exists in a latent state. The region projects much more as an area of great future possibilities than of present reality.
> --Antonio Texeira Guerra[1]

In a region characterized by such a low level of economic development, the existence and continued growth of Belém and Manaus seems strikingly incongruous. The disparity between the urban capital and the rural interior continues to widen. In Western Amazonia the inertia of life in the interior contrasts sharply with the increasing economic activity and urban developments occurring in Manaus.

One of the most pressing problems confronting this growing metropolis is the accommodation of its rapidly increasing population. Urban populations throughout Amazonas are growing faster than those in rural zones and Manaus is, by far, the fastest growing city in the state. The concentration of services in the capital, together with their almost complete absence in interior communities, enhances the city's attraction. The other amenities of city life, which are either lacking or greatly reduced in the small urban centers in the interior, also encourage a selective

migration to Manaus. The resulting urban population maintains an ever-increasing pressure on the already inadequate and overtaxed city infrastructure and constantly frustrates city and state efforts to elevate essential services to a minimal level.

A 1966 study of Manaus projected an average annual growth for the city in excess of 5 per cent during the 1960's.[2] The special census taken in 1967 revealed a 48 per cent increase in the city's population, in absolute numbers, during the first seven years of this decade. In all likelihood Manaus will have 250,000 inhabitants by 1970, and at least 300,000 by 1975.

Manaus continues to function as a centripetal force attracting the interior inhabitants of Western Amazonia. Every new development increases the city's drawing power. The trend toward industrialization and the accompanying economic revival encourages the migration of rural people to the city in their search for a better life. With the creation of the Zona Franca the city experienced a general convergence of new people--a marked increase in the rural-urban migration, and numerous merchants, businessmen, and speculators, all hoping to profit from the new legislation. The centrifugal forces normally emanating from a regional center, whether they be through a hierarchy of service and administrative centers, or in the form of industrial expansion into the interior, are not evident in Manaus or

the interior at present and are at best only a vague hope for the future.

The present governor of Amazonas, Sr. Danilo Aerosa, organized an ambitious five-year development plan for the state when he assumed office. The governor's goal is to simultaneously improve conditions in the capital and in key centers of the interior, thereby encouraging local development and reducing the pressures on Manaus by "creating an infrastructure capable of fixing man in the Amazonian hinterland."[3] The deficiencies in Manaus' infrastructure are enormous; but they are all concentrated in one location. For the interior of the state, with its forty-three municípios, the needs are so widespread that it was necessary to develop a system of priorities to keep from dissipating available resources. Fourteen municípios were designated as focal points for aid during the five-year plan.[4] These fourteen will then serve as centers radiating services and assistance to the other municípios.

If the state government is successful in decentralizing some of the city's service functions and relocating these functions into key centers in the interior, it will be a major accomplishment. The continued concentration of services in the capital city has worked to the detriment of the entire state by hindering development in interior communities and encouraging migration to Manaus. One of the

city's most serious deficiencies as a regional or sub-center is the complete lack of a network of service centers.

The new road now being opened between Manaus and Pôrto Velho should have a dramatic and far reaching impact on Amazonia and Manaus when it becomes operational. The road will symbolize the end of the physical isolation of northern Brazil and, at the same time, it should significantly modify trade patterns in Western Amazonia. The immediate reaction to the opening of the Belém-Brasilia and Brasilia-Pôrto Velho roads was a change in freight transportation modes. No longer completely dependent upon fluvial transportation, manufactured goods from southern Brazil quickly began arriving over the faster and in some respects safer and less expensive new roads. At the same time new settlements and agricultural developments appeared along the length of these roads and are themselves generating new traffic. In all likelihood, the Manaus-Pôrto Velho route will experience a similar development.

The long range effect of these three new roads will probably be a major modification of regional dependence within Amazonia. When the Brasilia-Acre road is completed, it should significantly reduce Rondonia and Acre's dependence upon Belém and Manaus as trade intermediaries. With the exception of bulk goods, such as petroleum products, which will continue to travel by ship, most other merchandise will probably move directly between Rondonia, Acre, and

southern Brazil via the shorter and faster overland route. Such a change in trade patterns will have a more adverse effect on Belém, which presently ships the bulk of general merchandise to Rondonia and Acre, than on Manaus. Manaus' trade, which is predominantly in petroleum products, will probably expand with the increased demand for motor fuels. It is also quite possible that former roles will be reversed when the Pôrto Velho-Manaus road is operational. Pôrto Velho could conceivably become a major intermediary for manufactured goods traveling from southern Brazil to Manaus and Roraima. It is already performing this function on a limited scale and will probably increase its activity when improved transportation permits.

A general lessening of the trade influence of both Belém and Manaus within Amazonia should accompany the expansion of the road network. Belém's future influence should gradually be restricted to the state of Pará and the territory of Amapá. Manaus will probably experience a similar reduction in areal influence, leaving it dominant in the state of Amazonas and the territory of Roraima. The new road from Manaus to Boa Vista will encourage the spatial integration of that territory into Western Amazonia and link it even closer to Manaus. Pôrto Velho's influence as a developing commercial center should continue to expand with the new road, making it the primary center of commerce for Rondonia, Acre and parts of Western Amazonas.

The eventual completion of the international road connections with Venezuela, via Manaus and Boa Vista, and Peru, via the Brasilia-Acre highway, should have little effect on trade and traffic between these countries. The great distances involved and the general lack of development in the interior regions of all three of these countries should prevent the roads from having anything other than local significance in the foreseeable future.

The neglect of agriculture continues to be a major weakness in the development of Amazonas. Manaus, the state of Amazonas, and the rest of Western Amazonia still rely on the importation of virtually all of their food. Fresh fish and farinha are notable exceptions. Rice, milk products, and fresh meat, to mention just a few, could be produced within the state with the proper application of modern technology and adequate resources. The Japanese colonists have demonstrated that by the organization of agricultural cooperatives, the application of fertilizer and intensive care to crops, they can profitably produce vegetables, chickens, and eggs for the local markets, and black pepper for exporting.

The "collecting mentality" is deeply rooted in Amazonia, but it will have to be modified before widespread development can be successful. The stated objective of the Zona Franca legislation is to encourage industrial, commercial, and agricultural development. Unfortunately,

agriculture continues to hold a secondary position in relation to the more glamorous and profitable industrial projects.

To this foreign researcher, one of the more difficult things to understand about Amazonia is the apparent unwillingness of the people to learn from their own past history. After the debacle with rubber, it would seem obvious that collecting and uneconomical production techniques are a very tenuous base upon which to build an economy. At present the jute industry, which constitutes a significant portion of the state and city's economy, is being seriously threatened by uneconomical production techniques. Although the processing plants are automated and competitive on the world market, the small-scale, unmechanized, high-cost producers of the jute fibers are forcing the finished product to compete with similar products made from paper or synthetic fibers. Whether the industrial concerns, who are not unaware of the problem, will eventually initiate, sponsor, and demand a more rational production process before their market completely disappears remains to be seen.

The promotion of tourism in Amazonas has enormous economic potential for Manaus. The abundance of tropical rainforests and rivers provides a natural resource in close proximity to the city that can be used over and over again. The necessary services that tourism requires could also

provide employment for a substantial number of people. The state government realizes the advantages of encouraging tourism and, in fact, already has a state agency for promoting tourism.

Located in the heart of the Amazonian tropical rainforest, Manaus is well situated to capitalize on an expanding tourist trade. The creation of the Zona Franca in 1967, followed by a newly established jet airline route with weekly flights from Miami to Rio de Janeiro, via Manaus, made travel to and from the capital of Amazonas much easier for tourists. The previous trickle of tourists who went out of their way to visit Manaus was quickly supplanted by a steady flow of world travelers anxious to see the "jungles" of South America. The sudden influx caught Manaus unprepared. The necessary infrastructure of good hotels, restaurants, organized tours, and bilingual guides was completely lacking.

Well aware of the potential profits to be made from the tourist industry, Varig Airlines announced plans to construct an ultramodern tourist facility called Hotel Tropical. The new hotel will be located on the outskirts of the city overlooking a scenic beach. Construction began in 1968, and is scheduled for completion by 1971. In the meantime several small hotels and restaurants quickly opened for business; but good accommodations, the kind that encourage tourists to come and then keeps them very

comfortable while they enjoy their visit and spend money, are still non-existent in Manaus. As the necessary infrastructure develops, tourism should become a profitable business in Manaus and a generator of considerable income for area residents.

The creation of the Zona Franca of Manaus is potentially the most important new development in Western Amazonia since the discovery of rubber. Although it is too early to evaluate the effect of the Zona Franca, it is already attracting new industry to Manaus, stimulating the city's economy and encouraging development. The city is currently experiencing the biggest building boom since the height of the rubber period at the turn of the century. The most serious threat to the eventual success of the Zona Franca is the fear that the rules and regulations of the free zone may be suddenly changed or invalidated by a capricious governmental decision. The recent government interference with the regulations concerning imported electrical appliances indicated that the Zona Franca might not be as secure and unchangeable as it was previously thought to be. Such action is sufficient to create an element of doubt in the minds of potential investors and make them reluctant to invest in the area, thereby jeopardizing the entire program for development. The initial rush of commercial activity provided employment for a considerable number of local residents and an immediate stimulus to the

city economy. If the Zona Franca is eventually successful in stimulating extensive agricultural and industrial activity, it will be a significant step in the process of Amazonian development, with Manaus occupying a central position in any such development.

When Manaus celebrated its two hundredth anniversary in 1869, it was still a small riverine community isolated in the interior of Amazonia. The developing rubber boom soon transformed it from a sleepy river village into a bustling commercial center. Today, one hundred years later, the city is experiencing another transformation. Manaus is gradually breaking away from its traditional function as an exporter of unprocessed regional products and importer of virtually everything consumed. Stimulated by an industrial complex that began in the early 1950's, a rapidly increasing urban population, and the creation of a Zona Franca, the city's former regional function as an entrepôt is slowly but surely being replaced by that of a metropolitan center resting on a developing industrial base. Jute has clearly supplanted rubber as the major export item of Amazonas. Industrialization, in the form of jute mills, an oil refinery, and various other small scale industries, is bringing about a diversification in the city's economic base which, in turn, is reducing the previous dependence upon commerce and contributing a stabilizing influence to the

city's development. The newly created Zona Franca of Manaus, if it is at all successful, should accelerate the process and contribute substantially to the transformation of the city into a truly effective regional center in Western Amazonia.

NOTES

1. Antonio Texeira Guerra, Grande Região Norte, Vol. I of Geografia do Brasil (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1959), p. 379.

2. A Cidade de Manaus (Manaus: Comissão de Desenvolvimento Econômico do Estado do Amazonas, 1968), p. 4.

3. Plano Quinquenal do Governo do Estado do Amazonas 1968-1972 (Manaus: Comissão de Desenvolvimento Econômico do Estado do Amazonas, 1968), p. 38.

4. Ibid., pp. 38-45. The municípios within each of seven physiographic zones in the state were classified and ranked on the basis of: total population, urban population, degree of urbanization, demographic density, number of cattle, and recent production figures for agriculture and industry. From that ranking fourteen municípios were selected: (1) Parintins, (2) Itacoatiara, (3) Maués, (4) Uaupés, (5) Coari, (6) Manacapuru, (7) Tefé, (8) Boca do Acre, (9) Lábrea, (10) Eirunepé, (11) Benjamin Constant, (12) Fonte Boa, (13) Manicoré, and (14) Humaitá.

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This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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